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Main tasks and solutions on environmental protection in 2018

Promoting the implementation of river basin environmental protection schemes

Accelerating Green Growth and strengthening cooperation in Việt Nam

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GREEN COOPERATION

The Ministry of Natural Resources and Environment meets international partners in the beginning of 2018

On March 2, 2018, at the headquarters of the Ministry of Natural Resources and Environment (MONRE), Minister Trần Hồng Hà, Deputy Ministers Võ Tuấn Nhân and Trần Quý Kiên chaired the meeting to celebrate the beginning of 2018 with representatives of foreign diplomats, ambassadors and international organizations to enhance mutual understanding and greater cooperation between MONRE and international partners.

▲ *Leaders of MONRE took photos with international partners*

The meeting of the New Year is the traditional culture of Vietnamese. Moreover, this is an annual event and also a beautiful tradition for many years of MONRE to share the results and achievements made in 2017 and at the same time giving good wishes for each other towards the New Year with many good luck and success.

Speaking at the meeting, on the occasion of the New Year, on behalf of the leaders of MONRE, Minister Trần Hồng Hà sent the best wishes to ambassadors and international partners for a happy and prosperous year. The Minister expressed his sincere gratitude to the ambassadors and representatives of countries and international partners for their effective support and cooperation with MONRE. He also expressed his confidence in the close cooperation between MONRE and international partners for further development in the field of natural resources and environment in general and the MONRE in particular.

On behalf of all invited guests, the United Nations Resident Coordinator and United Nations Development Program (UNDP) Resident Representative - Mr. Kamal Malhotra thanked the warm welcome of Minister Trần Hồng Hà as well as members of the MONRE. Speaking at the meeting, Mr. Kamal Malhotra said that environmental issues and climate change at that day was becoming hot and increasingly threatening to the life on earth. Mr. Kamal Malhotra hoped that the Government of Việt Nam would commit and act to finalize its plans for the 2030 agenda for sustainable devel-

opment and the efforts of Việt Nam in implementing the Paris Agreement… Mr. Kamal Malhotra also congratulated the government of Việt Nam, MONRE in the past year for organizing the First National Conference on Sustainable and Climate-Resilient Development of the Mekong Delta through the Resolution No. 120 of the Prime Minister…

For achieving its goals, Mr. Kamal Malhotra said that Việt Nam should have close cooperation with the international community in order to enhance the exchange of information, technology and economical support. Besides, in order to have the shared and collective strength of the international community, Mr. Kamal Malhotra wanted the government of Việt Nam to improve the administrative mechanisms by reducing the procedures for the co-operation to become faster and more effective to be worthy of the Prime Minister's message of a "tectonic government".

On the occasion of the New Year, Mr. Kamal Malhotra represented the invited guests to express the respect to the leaders and staff of the natural resources and environment sector of Việt Nam who were working tirelessly in the cause of environmental security. Furthermore, he committed to help Việt Nam as well as MONRE in sustainably building and developing the country■

Bảo Bình *(Monre source)*

Ministries work to improve environment protection in transportation

▲ *MONRE and MOT will work together to protect the environment and cope with climate change in the field of transportation during the 2018 - 2021 period*

The Ministry of Natural Resources and Environment (MONRE) and the Ministry of Transport (MOT) have agreed to work more closely together to protect the environment and cope with climate change in the field of transportation during the 2018 - 2021 period.

Under the agreement signed in Hà Nội March 8, the 2 ministries will cooperate to mitigate transport activities' impacts on natural resources and the environment as well as implement programmes to reduce greenhouse gas emissions and cope with climate change.

MONRE is in charge of chairing and coordinating with the MOT to make and implement plans on the use of seas, exploitation and sustainable use of seashore resources; and implementations of regulations on environmental protection and on importing and using secondhand ships.

They will cooperate in building and developing domestic carbon market and cooperation mechanism in mitigating greenhouse gas emission in transport activities.

Meanwhile, the MOT is responsible for working with the MONRE in controlling marine and island environment pollution; regularly updating transport data for the MONRE; and increasing information dissemination to raise public awareness of abiding by regulations on environment protection in the field of transportation.

Minister of MONRE Trần Hồng Hà said he expected that the 2 ministries would always stand side by side to uphold their resources and functions to better manage and supervise the adaptation of regulations on natural resources and environment in transport activities. The cooperation between the 2 ministries must be done regularly and each ministry should fulfill its role to improve the efficiency in managing resources, environmental protection and climate change adaptation. In addition, the 2 ministries should build and complete related regulations and mechanisms and share relevant information and data in the field, Hà said. The cooperation programmes should be concretized with specific plans, regular direction and supervision and review.

The 2 ministries will meet to share information and review cooperation tasks every 6 months during the 2018 - 2021 period to speed up related works and handle any emerging shortcomings■

Hồng Nhung *(VNS source)*

Việt Nam, RoK intensify environmental cooperation

A memorandum of understanding (MoU) was signed within the Korea-Vietnam Environmental Cooperation Forum in Hà Nội on April 16.

Addressing the forum, Vietnamese Minister of Natural Resources and Environment Trần Hồng Hà described the Republic of Korea (RoK) as one of Vietnam's most important strategic partners in environmental protection.

Việt Nam and the RoK are aware of the significance of enhanced bilateral cooperation in environmental protection, in order to ensure sustainable development of both sides, he said.

The two countries have agreed to expand the bilateral collaboration through the exchange of experience and information, and the transfer of technologies relating to environmental protection and settlement, the minister noted.

At the same time, they have committed to coordinating at international, regional and sub-regional forums to share viewpoints and consult each other in relevant spheres of mutual concern, according Hà.

▲ *Minister Trần Hồng Hà and Minister Kim Eunkyung handed over the Memorandum of Understanding*

Minister of Environment of the RoK Kim Eun-kyung expressed her hope that state management and environmental research agencies, environmental protection associations and businesses of Việt Nam and the RoK will actively exchange information and experience in management, promote technological transfer, and propose specific cooperation projects.

The forum focused on investment and environment policies in Việt Nam and the RoK, investment attraction policies in Hà Tĩnh, sewage system and river water quality in the province, and environmental technologies in the RoK■

Châu Loan *(VNA source)*

▲ *Participants of the Forum*

The 4th Việt Nam - Japan Environmental Policy Dialogue

During the 2 days of March 26 - 27, 2018, the 4th Việt Nam - Japan Environmental Policy Dialogue Meeting was held in Tokyo, Japan. The delegation of the Ministry of Natural Resources and Environment of Việt Nam (MONRE) was led by the Deputy Minister Võ Tuấn Nhân and leaders of Department of International Cooperation, Vietnam Environment Agency and Department of Meteorology, Hydrology and Climate Change. At the meeting, the Ministry of the Environment of Japan had attendance of Minister Tadahiko ITO, Deputy Ministers Yasuo Takahasi and Deputy Minister Arata Takebe and representatives of Department of International Cooperation.

▲ *Deputy Minister of MONRE Võ Tuấn Nhân and Deputy Minister of the Environment of Japan Ito, Takahasi with the delegation*

This is the annual meeting under the framework of the MOU between the 2 ministries signed for the second extension on December 14, 2016, in Hà Nội. The meeting aims to review and evaluate the cooperation activities which have been being carried out during the extended period and to determine the direction of cooperation in the coming time.

Within a working day, many contents and activities were shared and discussed by the 2 sides, focusing on climate change and environmental protection. Particularly, the field of climate change includes the issues related to the Joint Credit Mechanism (JCM), measurement, reporting and verification (MRV), adaptation and mitigation. The field of environmental protection includes issues such as waste management, chemical management, amendment of environmental protection law…

Both sides highly appreciated results of cooperation activities between the 2 ministries recently, particularly a series of supports such as consultancy and policy development, capacity building, knowledge sharing and experience as well as the development and implementation of projects under the JCM framework and mitigation of climate change impacts.

Speaking at the meeting, Deputy Minister Võ Tuấn Nhân, on behalf of MONRE, sent his sincerely thanks to the Ministry of the Environment of Japan for the fruitful cooperation and practical supports for Việt Nam recently. At the same time, the Deputy Minister also said that there are still many potential cooperation fields that the 2 ministries should continue to promote and expand in the future, especially climate change adaptation and development of policies and laws on environmental protection.

At the end of the meeting, the 2 sides agreed to maintain the current cooperation and to expand into a number of new activities such as development of a pilot project on waste-to-energy factory which expected to locate in Hải Dương province; construction of a POP laboratory at VEA, surveying the decentralized water treatment technology transferring needs and capacity. At the same time, he also proposed to the Ministry of Environment of Japan to consider for supporting to strengthen capacity for Hanoi University of Natural Resources and Environment (HUNRE) and Ho Chi Minh City University of Natural Resources and Environment (HCMUNRE).

The 5th Vietnam-Japan Environmental Policy Dialogue will be held in Việt Nam, scheduled in December 2018 or January 2019 which are being agreed by both sides agreed. The meeting will also have the participation of a number of Japanese companies specializing in waste treatment in order to introduce and demonstrate advanced waste treatment technologies which are being applied in Japan■

Hồng Nhự *(Monre source)*

Main tasks and solutions on environmental protection in 2018

Dr. Nguyễn Văn Tài - *Director General*
Vietnam Environment Administration

With the determination of the whole political system, the efforts of the Government, Ministries, sectors and localities, the environmental protection in 2017 has achieved many outstanding results. The system of policies and legislation on environmental protection continues to have new developments that are more complete and synchronous with the socialist- oriented market economy regime that the Party and the Government are building. Professional organizations on environmental protection have been strengthened from central to local levels and in ministries and sectors; International cooperation on environmental protection has been continuously strengthened and expanded. Environmental quality in many localities has made positive changes. We have been initially successful in achieving the objective of basically controlling and reducing the level of pollution, resource depletion and biodiversity loss; Continue to improve the quality of the environment; A few negative impacts on the environment are initially prevented; Many environmental problems have been resolved in time.

2018 is the transitional year in implementing the resolution of the 12th Party Congress, the socio-economic development plan 2016 - 2020, the Government's action program for the term of 2016 - 2021. The implementation of the tasks and plans of the environment sector is set in the context of the Government's determination, creating a clear change in the implementation of strategic breakthroughs with the motto of the Government "Discipline, integrity, action, creativity, and efficiency". Beside the achievements, the environmental sector is also facing difficulties and challenges such as: Some mechanisms and policies have not kept pace with reality; lack of effective management tools and measures; law enforcement capacity in some localities is limited; environmental pollution and degradation tend to increase; capacity, human resources, financial resources for environmental protection have not kept pace with the increasing number of management objects and arising environmental issues.

On the basis of positive changes in environmental protection in 2017, in order to strengthen environmental protection, tackle urgent environmental issues, prevent and reduce pollution, properly manage waste, improve environmental quality, it is necessary to focus on the priority tasks and basic countermeasures as follows:

First, focus on reviewing, amending and perfecting the system of policies and legislation on environmental protection

- Review, formulate the Scheme on amending and supplementing a number of articles of the Law on Environmental Protection and laws related to environmental protection; issue the Decree amending and supplementing some decrees, detailing the implementation of the Law on Environmental Protection.

- Review, adjust, or formulate new national standard regulations on the environment based on the experience of environmental management, legal system and environmental standards of developed countries in the world.

- Formulate and implement a special control scheme for projects and establishments which are likely to cause high environmental pollution. To set up a system of environmental criteria as a basis for selection and screening of production forms and production technologies in service of investment attraction, consideration and approval of investment projects.

- Develop a scheme on breakthroughs in mobilizing resources, attracting investment and socializing environmental protection, strictly following the following principles: "The beneficiaries of the environment are obliged to contribute financially to environmental protection; polluters and environmental degraders must compensate and pay for environmental treatment, rehabilitation and restoration expenses".

- Formulate a general scheme on enhancement of solid waste management capacity in urban and rural areas; scheme on environmental monitoring and warning in key economic zones, concentrated areas of many sources and environmentally sensitive areas in the period of 2018 - 2025, orientation 2030; scheme on enhancing biodiversity conservation capacity in protected areas and biodiversity corridors.

Second, continue to renovate the inspection, examination and supervision to promptly detect and strictly handle the violations

- Develop a plan for inspection in 2018 in the direction of renewal, reduction of the object of inspection, examination and renewal of the organization of inspection and examination teams. Completely resolve outstanding, complex, prolonged cases. In 2018, focus on inspecting and supervising big projects with potential risks of environmental incidents such as textile and dying,

steel making, chemical production; facilities having waste water flow from 200 m^3/day and night; outdated types of production and technologies, large sources of waste, discharge into environmentally sensitive areas such as coastal areas and river basins; strictly handle violations, especially acts of contaminating the environment.

- Continue to maintain the activities, promote the effectiveness of the hot line, receive and process information and feedback of organizations and individuals on environmental pollution in the central and local levels, detect and promptly handle incidents causing environmental pollution and prevent potential environmental incidents.

- Formulate and implement a comprehensive monitoring plan for potential establishments and projects that may cause high environmental pollution, including: Vĩnh Tân thermal power plant, VNT19 paper mill, Formosa Hà Tĩnh Steel Corporation; major projects (Central Highland bauxite, Thạch Khê - Hà Tĩnh iron, Đông Pao - Lai Châu and Nghi Sơn - Thanh Hóa rare earth).

Third, strengthen the coordination between ministries and sectors, the connection between central and local, dialogue between state management agencies and people on environment

- Focus on the coordination mechanism between the specialized agencies on environment protection at the central level, the ministries, sectors and localities, ensure the synchronized and effective coordination in the process of implementing the tasks of state management for environmental protection.

- Improve the quality and consistency in guiding and responding to problems and dealing with local requests and proposals in environmental protection.

- Study and formulate a mechanism for regular dialogue between environmental agencies at the central and local levels, people and enterprises in the field of environment, paying attention to the good settlement of environmental administrative procedures, timely acknowledge and resolve satisfactorily the difficulties, problems and suggestions of the localities and take measures to remove professional and financial issues in the state management on environmental protection.

Fourth, implement the monitoring program, formulate the database on environment

▲ *MONRE's Delegation inspected the situation of overcoming environmental incidents at Formosa Hà Tĩnh Steel Corporation*

- Focus on implementing monitoring programs in key economic zones, areas concentrated with waste sources and environmentally sensitive areas through the development of the scheme on monitoring and warning on environment of key economic zones, areas concentrated with waste sources and environmentally sensitive areas for the period 2018 - 2025, orientation 2030.

- Integrate data from waste source observation with environmental quality monitoring to forecast evolutions, assess, identify causes and have appropriate and timely response measures.

- Coordinate with the People's Committees of Hà Tĩnh, Quảng Bình, Quảng Trị and Thừa Thiên - Huế provinces to deploy the system of marine environment monitoring in 4 central provinces.

Fifth, strengthen organizational apparatus and reform administrative procedures

- Implement the project on strengthening the organizational apparatus and strengthening the capacity of environmental management staffs from the central to local levels in the period of 2017 - 2020 with a vision to 2030.

- Continue to improve the working manner, improve the effectiveness of administrative reform, especially for administrative procedures related to the people and enterprises; continue reviewing, removing unnecessary administrative procedures that cause difficulties for people and enterprises; complete procedures, simplify administrative procedures, reduce time needed to complete administrative procedures. Strengthen the application of information technology and computerization in the implementation of administrative procedures and licensing online. Deploying flexibly and efficiently online public services, and national one-stop customs mechanism.

The period of 2016 - 2020 is particularly important, deciding the completion of the goal of building a foundation to soon bring our country into a modern industrial country. The tasks of environmental protection set up in this period is abundant. It requires us in 2018 to continue to have effort, solidarity, determination and creativity in implementing tasks and solution to achieve the important goals set, so that the environment is really one of the 3 pillars of sustainable development■

Some orientations in state management on nature conservation and biodiversity

Dr. Phạm Anh Cường - *Director*
Dr. Nguyễn Xuân Dũng
Department of Biodiversity Conservation
Vietnam Environment Administration

As a unit performing the function of advising and performing state management tasks on nature conservation and biodiversity (biodiversity) nationwide, in the past time, the Department of Biodiversity Conservation has continued to implement the Law on Biodiversity and its guiding documents, closely following the orientations and tasks of the Party Central Committee's Resolution No.24-NQ/TW on pro-actively responding to climate change and strengthening the management of resources and environmental protection; Resolution No.35/NQ-CP by the Government on some urgent issues in environmental protection; National Strategy on Biodiversity up to 2020, vision to 2030 and others.

SOME ACHIEVEMENTS IN THE STATE MANAGEMENT ON BIODIVERSITY

Completion of legal documents development task

The development of legal documents to create a legal framework for biodiversity conservation has been paid good attention to and promoted, especially the documents on the implementation of the Law on Biodiversity. According to the statistics, from 2012 up to now, there have been more than 20 legal documents guiding the implementation of the Law, of which development is led by the Department of Biodiversity Conservation and submitted to competent authorities for promulgation to contribute to creating a legal framework for comprehensive management on biodiversity issues.

These legal documents include Decree on management of endangered, valuable and rare species prioritized for protection (Decree No. 160/2013/ND-CP dated 2/11/2013 of the Government); Decree on management of biological safety of genetically modified organisms, genetic specimens and products of genetically modified organisms, and state management of biological safety of genetically modified organisms (Decree No.69/2010/ND-CP dated 21/6/2010, Decree 108/2011/ND-CP dated 30/4/2011 of the Government); Decree on access to genetic resources and benefit sharing from the use of genetic resources (Decree No. 59/2017/NĐ-CP dated 12/5/2017 of the Government); National Strategy on Biodiversity up to 2020 with a vision to 2030 (Prime Minister's Decision No. 1250/QD-TTg dated 31/7/2013); Master plan for biodiversity conservation of the whole country up to 2020 with orientation to 2030 (Decision No. 45/QD-TTg dated 8/1/2014 by the Prime Minister).

In addition, many technical guidelines are issued timely to meet the needs of management in practice that arise locally such as: Guide on provincial biodiversity conservation planning; Technical guidance on classification of wetlands; Technical guidance on biodiversity survey and development of biodiversity reports; Guide the registration forms, certificates and reports of biodiversity conservation facilities; Guide on the organization and operation of the appraisal councils for wild animals and wild plants on the List of endangered, valuable and rare species prioritized for protection.

Capacity building to guide the implementation and promotion of communication and awareness raising

In parallel with the development of legal documents, capacity building for implementation, communication, and awareness raising on the implementation of laws on nature conservation and biodiversity has been strengthened. Every year, the Department organizes activities on communication and awareness raising with many events, seminars, trainings

▲ *Delegates planting trees in the coastal accretion of Thụy Xuân commune, Thái Thụy district, Thái Bình province in response to the 2017 Wetlands Day*

on different subjects; guides the localities to organize activities to commemorate the International Day of Biodiversity on May 22 and World Wetlands Day on February 2.

In addition, the Department develops, publishes training materials, publications and disseminates reference materials related to biosafety of genetically modified organisms, access to genetic resources and benefit sharing; at the same time, organizes training courses and provides lectures on the contents of the Government's Decree No.155/2016/ND-CP dated 18/11/2016 on sanctioning administrative violations in environmental protection related to biodiversity conservation for officials of provincial departments of natural resources and environment, and other sectoral organisations in the provinces.

The Department also advised on the selection, nomination and organization of the Congratulatory Ceremony of the title of ASEAN Biodiversity Heroes for Prof. Đặng Huy Huỳnh - The first scientist of Việt Nam honored to receive the title, and advised to support the proposal of Bái Tử Long Nature Reserve to be an ASEAN Heritage Park (AHP). These 2 events were selected by the Ministry of Natural Resources and Environment (MONRE) as 2 of the top 10 events in 2017.

Enforcement of legislation on biodiversity is emphasized

In the past time, the inspection work in combination with guiding and supporting the implementation of legislations on biodiversity conservation and inspection has been deployed in the localities, in protected areas and conservation facilities nationwide. This activity has played a very important role in guiding and assisting the target groups in enforcing laws on conservation and at the same time, contributing to detecting shortcomings in the law enforcement process to propose direction for more appropriate adjustment.

International cooperation, scientific research and development of biodiversity database to support the state management on conservation is accelerated

This is a noticeable function of the Department of Biodiversity Conservation. The Department has always fulfilled its role as the focal point and advising body to the leaders at all levels on the implementation of international commitments in the field of biodiversity: The Ramsar Convention, the Biodiversity Convention, the Cartagena Protocol on Biosafety, The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity; The Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, ASEAN Center for Biodiversity, Ramsar Regional Center - East Asia (RRC), Global Tiger Initiative, Flyway Partnership, Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES)...

The Department has worked closely with national and international organizations, and actively participated in many international forums such as CropLife Asia, Helvetas, United Nations Development Program on Trade and Development, Fund Biodiversity is a long-term partner of many national and international organizations in biodiversity conservation such as: CropLife Asia, Helvetas, UNCTAD, GBIF, WWF, IUCN, USAID...; organizes capacity building and awareness raising in the field of biosafety of genetically modified organisms, access to genetic resources and benefit-sharing, bio-trade, management of protected areas and exchange of biodiversity information. In addition, the Department has been actively implementing many ODA projects, including non-refundable ODA projects (grant aid) from the Global Environment Facility, JICA, and loan projects funded by Asian Development Bank (ADB).

Over the past time, the Department has implemented a number of scientific and technological projects, contributing to building a scientific foundation for biodiversity conservation. The main research directions are: conservation and development of ecosystems; species conservation, supplementary financial mechanisms for conservation. Many projects have been highly appreciated by the acceptance council. There are research topics such as: Study the scientific and practical basis of legal obligations and compensation in the field of biosafety of genetically modified organisms; Theories and practices on biodiversity offsets in Việt Nam... On the other hand, the development of biodiversity databases is gradually being strengthened. Tools for baseline survey, development of reports, and development of the National Biodiversity Database (NBDS) were disseminated and guided for implementation *www.nbds.vea.gov.vn*.

Advising and proposing ideas on the handling of practical management issues

This is a very important activity in the advisory function of the Department: Reviewing and evaluating the system of captive wildlife sanctuaries, and the actual deployment in granting permits for biodiversity conservation facilities in localities in order to propose solutions for effective management of conservation facilities in the coming time; Monitoring and supervising the exportation and importation of endangered, valuable and rare species prioritized for protection and their products; Consulting on biodiversity conservation for tourism planning issues at Sơn Trà Peninsula, environmental incidents in four central provinces, submergence of Vĩnh Tân Thermal Power Plant in Ninh Thuận province and other activities related to the conservation of species.

ORIENTATIONS FOR DEVELOPMENT IN THE COMING TIME

In an effort to continue affirming its role and position in the context of nationwide promotion and strengthening of state management on environmental protection, in general

▲ *Workshop on conservation and sustainable use of biodiversity for community livelihood development*

and biodiversity conservation, in particular, the Department of Biodiversity Conservation identifies our operational direction in the coming time as follows:

General direction

- To promote the elaboration, finalization and submission for promulgation of legal documents on biodiversity conservation and the effective implementation of the Biodiversity Law, the relevant guiding documents for implementation of the Law; especially the identification of specific approach, objectives, mechanisms for management and conservation of nature and biodiversity in relation to the new Forestry Law, Fisheries Law, which were enacted together with the current Biodiversity Law.

- Coordinate closely with ministries, central and local departments, political and social organizations; and international organizations on the implementation of activities related to biodiversity conservation.

- Strengthen law enforcement capacity to conserve biodiversity in protected areas, prioritizing wetlands of international importance (Ramsar areas), ASEAN Heritage Parks (AHP), Biosphere Reserves and Protected Areas, which are planned and established under the Biodiversity Law.

- Continue to attach importance to the inspection, guidance and support for the implementation of legal documents on biodiversity conservation for the protected areas.

- Enhance Vietnam's position in the implementation of international conventions on nature conservation and biodiversity; Promote international cooperation and mobilize all resources for investment in biodiversity conservation in Việt Nam.

Specific activity orientations

- Closely coordinate with the concerned units in finalizing the Decision defining the functions and tasks of the Department; Promptly stabilize the organization, personnel in the new situation; Finalize the job placement scheme; Closely coordinate with the Ministry of Agriculture and Rural Development and concerned ministries in elaborating legal documents and other coordinated contents in the state management on biodiversity; Review the results of the implementation of the Biodiversity Law and propose adjustments and amendments to the Law in the new context and after 10 years of implementation.

- Continue to elaborate, amend and guide the implementation of documents on management of wetland protected area sand biodiversity corridors; Legal documents on management of endangered, and valuable and rare species prioritized for conservation; Control of invasive alien species, management mechanisms for conservation facilities; management of genetically modified organisms and traditional knowledge relating to genetic resources, management of access to genetic resources under the Biodiversity Law; and policies for support and management of small-scale conservation facilities with community participation.

- To build, improve and develop a national database to meet the management and forecasting needs, including monitoring programs, baseline surveys, and a thorough reporting system from central to local levels and protected areas.

- Promote the research and application of new financial instruments, economic tools (PES, TEEB, BBOP, biodiversity conservation fund, biodiversity offsets...), new approaches (ecosystem approach, co-management approach, community participatory management...) to improve the effectiveness of biodiversity conservation.

- Develop tools to guide the assessment of impacts on biodiversity in environmental impact assessment and climate change impact assessment.

- To promote and expand the development of models of conservation and sustainable use of ecosystems, restoration of degraded natural ecosystems and enhancement of management efficiency of protected areas.

- To well perform the focal point role for international conventions on biodiversity, such as: The Ramsar Convention, the Cartagena Protocol on Biosafety, the Nagoya Protocol on Access to Genetic Resources and Benefit Sharing, The Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, the focal point of cooperation between the ASEAN Center for Aquaculture (ACB), Ramsar Regional Center - East Asia (RRC), and coordinating in implementation of Global Tiger Initiative■

Promoting the implementation of river basin environmental protection schemes

MSc. Nguyễn Thượng Hiền - *Director*
Department of Waste Management and Environmental Promotion
Vietnam Environment Administration

Over the past time, the implementation of 3 schemes on environmental protection of river basins (Cầu - Nhuệ, Đáy rivers, Đồng Nai river system) has achieved positive results, contributing to reducing pollution in the river basins. Following the results achieved in previous years, in 2017, MONRE co-chaired with 3 River Basin Environmental Protection Committees for Cầu - Nhuệ, Đáy rivers and Đồng Nai river system to direct, urge and organize the implementation of the schemes.

Some results of implementing 3 schemes on river basin environmental protection

TO DIRECT, COORDINATE AND ORGANIZE THE IMPLEMENTATION OF POLICIES AND LAWS

In 2017, a number of documents related to environmental protection of water resources promulgated such as the Government's decrees on the method of calculating and collecting fees for the permits to exploit water resources; provisions on sanctioning administrative violations in the field of water and mineral resources… MONRE's circulars regulating the monitoring of water resource exploitation and use, the national technical regulation on wastewater from animal husbandry and processing of cassava starch. In addition, ministries and sectors have promulgated circulars and legal guiding documents, creating the legal and policy framework and contributing to the promotion of environmental protection, in general, and environmental protection of river basins, in particular. Provinces and cities in 3 river basins have also issued relevant documents such as water resource planning, and zoning of wastewater receiving areas, list of and measures to deal with seriously polluting establishments, and regulations on environmental protection fee for wastewater, solid waste...

In implementation of Directive No.25/CT-TTg dated 31/8/2016 of the Prime Minister on some urgent tasks and solutions for environmental protection, the River Basin Environmental Protection Committees for 3 river basins have cooperated with MONRE to implement the inspection and examination of those establishments that have a wastewater flow of 200 m^3/day or more; to research and prepare a list of industrial zones and clusters that may potentially cause serious environmental pollution that requires special monitoring nationwide; to formulate a scheme on census, assessment and classification of sources of wastewater discharge nationwide; to build a national database on wastewater discharge sources; to strengthen accountability, to have appropriate mechanisms to improve the effectiveness and efficiency of the operation of the River Basin Environmental Protection Committees.

Currently, MONRE is leading the development of the draft Decree amending and supplementing a number of decrees detailing the implementation of the Law on environmental protection; at the same time, to submit to the Prime Minister a Scheme for the establishment of the river basin Committees (in accordance with the Law on water resources in 2012), including the proposal to restructure 3 River Basin Environmental Protection Committees; to complete the draft circular on assessment of bearing capacity and wastewater receiving capacity of rivers and lakes; Circular on management of river-bed sand and gravel, protection of river-beds, river banks, floodplains...

MAINTAINING AND IMPROVING THE WATER QUALITY OF RIVERS AND STREAMS ON 3 RIVER BASINS

Vietnam Environment Administration has been implementing the monitoring program of water environment on 3 river basins, with frequency of 5 times/year including 42 monitoring points on the Cầu river basin, 42 points on the Nhuệ - Đáy river basin, 49 points in the Đồng Nai river system basin, and some points at borders of provinces. Local monitoring programs are also implemented. Results of monitoring in 2017 show that on the basin of Cầu river, from the upstream in Bắc Cạn province to section through Thái Nguyên city, water quality is at a good level; at Chợ Mới (Bắc Cạn) point, water quality has improved compared to 2016. However, in the section through Thái Nguyên

in July - August 2017, water quality was deteriorated, with increased COD, BOD_5 content and turbidity. In the section running through Bắc Giang and Bắc Ninh, the quality of water had declined considerably due to the water intake of Ca Lo river in Bắc Giang and Ngu Huyen Khe river in Bắc Ninh, water quality was at a moderate level, only used for irrigation, or water transportation purposes.

The quality of Nhuệ - Đáy rivers (section flowing through Hà Nội and Hà Nam) in July - August 2017 had improved. WQI values range from 52 - 74, water quality at all sites was at a moderate level; the water could be used for irrigation purpose. At the downstream of Đáy river, section flowing through Nam Định and Ninh Bình, water quality had declined at most points. The water quality of Bồi river, Hoàng Long river (Ninh Bình) and Đào river at Lộc Hà (Nam Định) had slightly decreased. All of Hanoi's inner-city rivers have a deteriorating water quality; at most of the monitoring points, the water was severely polluted (WQI ranges from 16 - 27).

The water quality of the rivers in the basin of the Đồng Nai river system had only reached an average level; the water quality of Saigon river continued to change markedly from upstream to downstream, and remained stable compared to 2016. In the upstream section from Tha La bridge (Tây Ninh) to Ben Suc Bridge (HCMC), the water quality was at a good level, suitable for domestic water supply. Starting from the confluence of Thi Tinh River through My Phuoc Industrial Zone (Bình Dương province) to downstream at Tan Thuan Port (HCMC), water quality is only at a moderate level, suitable for irrigation and other similar purposes. Meanwhile, the water quality of the Đồng Nai river is affected in turbidity and TSS parameters due to flow characteristics (especially in the rainy season).

IMPLEMENTATION OF TASKS AND PROJECTS ON ENVIRONMENTAL PROTECTION OF RIVER BASINS

At the central level, MONRE continues to improve and operate the Portal of river basin environment for the Nhuệ - Đáy, Cầu rivers and Đồng Nai river System; The Ministry of Construction has guided and organized the implementation of the master plan for drainage and wastewater treatment system in residential areas and industrial zones in 3 river basins up to 2030, and solid waste management master plan for 3 river basins until 2030; The Ministry of Transport strengthens the management of traffic order and safety as well as the prevention of environmental pollution in inland waterways and maritime transport, implement inland waterway dredging projects, and maritime navigation channels and storm shelters at basin rivers; The Ministry of Agriculture and Rural Development deploys investment projects according to the road-map in Decision No.937/QD-TTg dated 1/7/2009 on the drainage planning of the Nhuệ river system. Other ministries (Ministries of Health, Industry and Trade, Public Security...) have developed their specialized tasks integrated with environmental protection.

At the localities, 3 River Basin Environmental Protection Committees continues to urge the implementation of the schemes on the environmental protection of river basins under the guidance of the Ministry of Natural Resources and Environment, focusing on statistical work and development of the database of wastewater discharge sources to the river basins. Besides, many construction works and projects on solid waste, wastewater treatment are invested with a total amount of up to trillions of dongs. Provinces and centrally-run cities on 3 river basins have also been active in implementing projects to renovate, dredge, clear water flows and water sanitation, upgrade water drainage systems, and coordinate in settlement of some inter- provincial issues. In addition, within the framework of the Capacity Building Project for Water Management in River Basin in Việt Nam funded by JICA, in 2017, the project has organized training courses for 4 provinces in the basin of the Đồng Nai river system. (HCMC, Đồng Nai, Bình Dương and Bà Rịa - Vũng Tàu), 3 provinces on the Cầu river basin (Bắc Giang, Bắc Ninh and Thái Nguyên); the implementation of the pollution management project for industrial zones in Đồng Nai, Nhuệ-Đáy river basins from the World Bank's ODA in Nam Định, Hà Nam, Đồng Nai and Bà Rịa-Vũng Tàu provinces. At the same time, there is investment in automatic surface water environment monitoring stations to control water pollution caused by the industrial zones on river basins. Up to now, 17 automatic surface water monitoring points have been constructed, installed and commissioned, including 9 stations in the Đồng Nai river system (6 stations in Đồng Nai province, 3 in Bà Rịa - Vũng Tàu province) and 8 stations on Nhuệ - Đáy river basin (Nam Định province: 4 stations, Hà Nam: 4 stations).

On the other hand, investment projects on the construction of urban drainage and sewerage systems have also been strengthened, helping to increase the number of urban centers having concentrated wastewater treatment systems, contributing to the improvement of water quality in the river basins, such as the project of building drainage and wastewater treatment system in Bien Hoa city phase 1, capacity of 9,000 m^3/day (Đồng Nai province); construction and upgrading of the drainage and wastewater treatment system in Dong Xoai Town (Bình Phước prov-

ince), Thuận An urban wastewater treatment plant (Bình Dương), capacity of phase 1 is 17,000 m^3/day. Especially, the project of Yên Xá wastewater treatment system construction (Hà Nội), with the capacity of 270,000 m^3/day, helping to "revive" the Tô Lịch, Lừ and Sét rivers and part of the Nhuệ river.

STRENGTHENING THE ENVIRONMENTAL MANAGEMENT AND STATISTICS, DEVELOPMENT OF DATABASES OF WASTEWATER DISCHARGE SOURCES ON THE RIVER BASINS

Over the past time, the inspection, examination and control of pollution have received good attention. On 3 river basins, from 2016 - 2017, the inspectorate of natural resources and environment sector, the environmental police force and the interdisciplinary inspection and supervision delegations have conducted inspection and examination of hundreds of establishments, and collect fines up to tens of billions of dongs. Ministries and sectors have also conducted inspection, examination and supervision of units and establishments under their respective management. The appraisal of environmental impact assessment reports and issuance of permits for discharge into river basins continued to be carried out vigorously. People's Committees of provinces and cities in 3 river basins have paid much attention to environmental protection, ensuring that they achieve and exceed 1% of budget expenditures annually for environmental protection in the province.

In addition, information on major manufacturing/ business facilities operating on 3 river basins was investigated in detail and updated on the river basin portal, thereby serving well for environmental management work. According to statistics in 2017, there are 48 industrial zones (IZs), 84 industrial clusters (ICs), 141 trade villages, 246 health facilities and more than 3,500 enterprises in the Cầu river basin area. There are about 2,521 wastewater discharge sources in the Nhuệ-Đáy river, including 1,672 sources of production and business bases, 126 of industrial zones and industrial clusters, 137 health facilities (hospitals), 586 trade villages. There are about 5,217 wastewater discharge sources in the basin of Đồng Nai river system, including 125 IZs, 32 ICs, 3 export processing zones (EPZ), 200 health facilities and 4,297 manufacturing plants.

COORDINATION IN SOLVING ENVIRONMENTAL PROBLEMS IN THE LOCALITIES, AND INTER-PROVINCIAL AND INTER-REGIONAL ENVIRONMENTAL ISSUES

In recent years, on the Cầu river Basin, with the efforts of 6 provinces, environmental issues have been gradually resolved. At the Nhuệ - Đáy rivers, the long- standing interprovincial problems in many years is wastewater discharge from households, industrial establishments and trade villages of Hà Nội city into the Nhuệ - Đáy rivers, affecting the downstream provinces,

▲ *The Ba Bò channel (the section passing through Bình Dương province) was dredged, cleaned, renovated and embanked*

especially Hà Nam. In response to these challenges, provinces and cities in the basin have increasingly coordinated the monitoring of wastewater discharge sources to reduce pollution in downstream areas.

Particularly on the basin of the Đồng Nai river system, provinces and cities have signed and implemented the Regulation No.37/QCPH-TPHCM-BRVT-DN-BD-TN-LA-TG-BP-LD on 6/1/2017 on state management in the field of water resources, mineral resources and environmental protection in the areas adjacent to the administrative boundaries among HCMC, Bà Rịa - Vũng Tàu, Đồng Nai, Bình Dương, Tây Ninh, Long An and Tiền Giang. At the same time, the provinces have taken the initiative in coordinating the prevention and treatment of pollution in some hot spots such as Đồng Nai and Bình Thuận for the pollution of the Giếng river; HCMC and Bình Dương in dealing with pollution of Ba Bò canal; with Long An province in addressing pollution in Thay Cai - An Ha channel; to attach importance to environmental management in provincial boundary areas; to coordinate in the operation of reservoirs, irrigation and hydro-power works; to establish inter-provincial environmental monitoring program...

A NUMBER OF DIFFICULTIES, OBSTACLES AND DEPLOYMENT PLANS FOR THE IMPLEMENTATION OF THE SCHEMES OF ENVIRONMENTAL PROTECTION IN RIVER BASINS

In addition to the above- mentioned results, the implementation of 3 environmental protection schemes still have difficulties and problems that have not been resolved, specifically: There are no dedicated fund or financial mechanisms for the implementation. The target program to support the thorough treatment of public utility establishments causing serious environmental pollution for the 2016 - 2020 period has not been approved. The progress of investment in environmental infrastructure in localities is slow; the statistics and management of wastewater discharge sources are not regularly implemented. The addressing of inter- regional environmental issues is slow; the number of staff and capacity of environmental management agencies in the localities have not met the practical requirements.

For the implementation of the 3 schemes to be effective, in the coming time, the River Basin Environmental Protection Committees should focus on two breakthrough tasks: to develop and implement an integrated water resource management plan, and the comprehensive tasks and projects on the river basins, at the same time, strengthening the mechanism of coordination and supervision between provinces and cities to solve inter- provincial issues. In both of these tasks, the lead role of MONRE is particularly important.

In addition, at the meeting sessions of River Basin Environmental Protection Committees in 2017, the Committees, ministries, sectors and localities agreed a number of major orientations in 2018 and the following years: To continue studying and proposing a number of specific policies and mechanisms of environmental protection on the principle of consistency and uniformity throughout the basin, not to be divided by administrative boundaries. In the immediate future, it is suggested to propose to the Prime Minister to promptly consider and approve the Scheme on the establishment of the River Basin Committees nationwide on the basis of consolidating and adjusting the organizational structure of the current River Basin Environmental Protection Committee; To intensify the inspection and examination of the observance of the laws on environmental protection; thoroughly handle establishments which cause serious environmental pollution; to continue investing in monitoring systems and environmental technical infrastructure; To implement inter-sectoral, inter-regional planning, programs and projects; To develop and implement environmental protection projects and works on river basins; To set up a database of wastewater discharge sources and plans for management and handling of wastewater sources belonging to 3 river basins; Publicize the main discharge sources (>200 m^3/day); To strengthen the inter-provincial coordination in the prevention and treatment of environmental pollution and degradation in some hot spots of pollution in rivers and streams running through many provinces, especially in the provincial boundary areas. Each locality, depending on its location on the basin and resources, selects priority and urgent tasks and activities for implementation. The upstream localities shall enhance forest protection and development, create aquatic resources for the basin, control hydro-power projects and the exploitation of minerals. Localities downstream shall strengthen waste management and treatment, rational urban development planning and strictly control sources of wastes that may cause environmental pollution.

In general, over 10 years of implementation of 3 schemes on environmental protection in river basins, the awareness of Ministries, sectors and localities on environmental responsibility in the whole basin has been improved remarkably. It is expected that in the coming time, when the River Basin Committees are established and put into operation, the integrated water resource management mechanism will be widely deployed with high determination of the provinces and cities on the river basin and the effective participation of ministries and sectors■

Management, access and benefit - sharing from genetic resources towards sustainable development

Prof. Dr. Đặng Huy Huỳnh
Vietnam Association for Conservation of Nature and Environment

▲ *Application of biotechnology to transform genetic resources of high economic values into commodities for circulation on the market*

SCIENTIFIC SIGNIFICANCES AND THE IMPORTANCE OF GENETIC RESOURCES

Genes are hereditary materials, a form of tangible resources (attributes of genetic resources) and invisible (knowledge related to genetic resources), of scientific significance and importance to the global community in general and to each country in particular. Biological gene resources are the genetic resources of all plants, animals, microorganisms and fungi, which are extremely important assets in economic and social development, and environmental protection.

Việt Nam has the unique characteristic, located in the North, the transition zone between the living creature flows, the bridge between biological communities (plants, animals, microorganisms, fungi). According to statistics, there are over 16,400 plant species in Việt Nam, including 13,400 vascular plant species, 3,000 lower plant species, and about 26,000 vertebrate and invertebrate species; 7,500 species of microorganisms and thousands of species of fungi distributed naturally on land, wetlands and seas, along with thousands of species, types of plants and animals tamed by human throughout the regions in the country. It is the biodiversity offering the richness of biological genetic resources, together with the indigenous knowledge of Vietnamese generations discovered and selected the precious genetic resources that are valuable in life.

Genetic diversity in nature and in the humane society in Việt Nam has been an invaluable resource contributing to the achievements of the agricultural, forestry, fishery and pharmaceutical sectors; the foundation of the food processing industry, pharmaceuticals, cosmetics, fine arts, construction, architecture, eco-tourism, art and culture, sculpture, even in the spiritual life of the community. It contributes to the production of unique and highly competitive products for businesses, farm owners in rural, mountainous and island areas, which is a sustainable basis for food security, environmental security and social security in the national sustainable development strategy.

It can be affirmed that the economic-cultural value and potential of existing genetic resources in regions and areas in Việt Nam are every high, including some valuable and endemic genetic resources in the tropical natural environment such as: Ngọc Linh ginseng, rose-wood, HINOKI Việt Nam, Catkin Yew (*Amentotaxus argotaenia*), Snub-nosed langur (*Rhinopithecus*), Cát Bà langur (*Trachypithecus poliocephalus*), Tam Đảo Salamander (*Paramesotriton deloustali*), and indigenous species such as Móng Cái pig, I pig, yellow bull, ax head bull, H'Mong bull, Phan Rang lamb, Phú Quốc dog, Ri chicken, Hồ chicken, Đông Tảo chicken, sugarcane chicken, black chicken… These are natural heritages created by a treasure of indigenous knowledge through the generations of 54 ethnic groups in Việt Nam, a valuable asset of great importance in the green economy, green growth and sustainable development.

At present, genetic resources are being lost and depleted due to regional population pressure and increasing environmental pollution, and the invasion of alien species. In addition, the mechanisms, policies, encouragement, preservation and conservation of indigenous genes in each locality are limited; the process of international exchange in the form of trade, tourism, scientific research is not well-done, without any specific guidance in the management and monitoring of access to genetic resources. On the other hand, the mechanism of accessing and benefit sharing gained from the exchange and use of genetic resources among organizations, enterprises and individuals inside and outside the country is not specific and appropriate. Local communities have not benefited directly from their traditional knowledge and labor in maintaining, preserving and exchanging genetic resources with other stakeholders (producers, managers, scientists, educators, communities...).

MANAGEMENT OF ACCESS TO GENETIC RESOURCES AND BENEFITING-SHARING FROM THE USE OF GENETIC RESOURCES

On March 17, 2014, Việt Nam officially joined and became the 31st member of the Nagoya Protocol on access to genetic resources, fair and reasonable sharing of benefits arising from the use of genetic resources (ABS). Accordingly, the Ministry of Natural Resources and Environment is assigned to chair and coordinate with the concerned parties to formulate and submit to the Government a draft decree on the management of access to genetic resources and benefit sharing from the use of genetic resources. On May 12, 2017, the Government issued Decree No.59/2017/NĐ-CP on management of access to genetic resources and benefit sharing from the use of genetic resources (Decree No.59/2017/ND-CP), effective from 1/7/2017. This is a legal basis for the management on conservation and benefit sharing of biological resources in Việt Nam towards the sustainable development.

The decree is based on the principle: Vietnamese government exercises sovereignty over the entire genetic resources in the national territory. Other parities of foreign organizations or individuals who are only allowed to access genetic resources only when licensed by a competent Vietnamese state agency. The Government encourages Vietnamese organizations and individuals to conduct activities on research and development of genetic resources. The sharing of benefits from the use of genetic resources should ensure fairness and reasonableness among stakeholders and contribute to the effective management of biological resources, promote scientific research processes and commercialization of genetic resources, focusing on the role of local communities in the conservation and sustainable use of genetic resources.

Granting, extending and revoking permits for access to genetic resources

According to the Decree, competent state agencies shall grant, extend and revoke permits for access to genetic resources, including: The Ministry of Agriculture and Rural Development shall grant, extend and revoke permits for access to genetic resources for species of plants, livestock, aquatic animals and forest trees; Ministry of Natural Resources and Environment grants, extends and revokes permits for access to genetic resources in other cases.

Registration and application for access genetic resources are required for Vietnamese organizations and individuals that need to access genetic resources to research for commercial purposes and commercial product development; foreign organizations and individuals who wish to access genetic resources in the territory of Việt Nam for any purpose; Vietnamese organizations and individuals that need to bring accessed genetic sources abroad.

Individuals who can register and apply for permits to access genetic resources according to the above regulations must satisfy the following requirements: Having a Degree (from university or above) in one of the following fields: Biology, biotechnology, pharmacology and agricultural sciences; being a member of a scientific and technological organization operating in accordance with the law of the country where the organization is established in the fields of biology, biotechnology, pharmacy or agricultural sciences, and is guaranteed by such an organization in writing.

Where there is a need to access genetic resources, the above-mentioned individuals must take the following steps: Registration of access to genetic resources with competent state agencies; agreement and signing the contract with the provider; requesting people's committees of communes to certify the contracts; submitting dossiers of application for permits to access genetic resources to competent state agencies; providing additional information and documents, completing the dossier at the request of a competent state agency in the course of evaluating the dossier of application for a permit for access to genetic resources.

Permits for access to genetic resources will be revoked when competent state agencies detect one of the following cases: Organizations and individuals that have provided fabricated information for being granted access to genetic resources; access to and use of genetic resources that harm human, the environment, security, national defense and national interests of Việt Nam; Conducting access to and use of genetic resources beyond the scope of the permit; Other cases of violation as prescribed by the law. Within 30 days after receiving information on violations or complaints about permits for access to genetic resources, the licensing competent state agencies shall complete the processing of dossiers in order to issue a decision on revoking of the permit for access to genetic resources. From the date of issuance of the decision to revoke the permit for access to genetic resources, organizations and individuals who are granted the permit for access to genetic resources must comply with the following requirements: No longer access to and use of the genetic resources under the permit; continue to implement agreements on distribution of benefits to the accessed genetic sources as stipulated in the signed contract; compensate for damage and restoration of the environment and biodiversity in accordance with the provisions of Vietnamese law.

Benefit-sharing from the use of genetic resources

The Decree states that the benefits from using genetic resources include monetary benefits or non-monetary benefits. Accordingly, *monetary benefits* include: Fee from collection of genetic specimens; royalties; franchise fees; lump sum or installment payments as agreed upon; other monetary benefits arising during the use of

genetic resources. *Non-monetary benefits* include: Sharing research results; the right to participate in cooperative activities in research, development and production of commercial products; the right to have access to relevant scientific and technical information; technology transferring for the gene source provider; training and capacity building on research and development of genetic resources; shared intellectual property rights correspond to the contribution to creative outcomes on the basis of access to genetic resources; other non-monetary benefits.

The way in which monetary benefits are shared is calculated by the rate of benefit sharing in cash for products generated from the use of genetic resources is not less than 1% of the total annual sales of that product; the rate of benefit sharing with proceeds from the transfer of genetic resources and derivatives of genetic resources, use of intellectual property rights to creative results from the use of genetic resources must ensure that the supplier receives not less than 2% of the total value of the transfer or gross proceeds from the use of intellectual property rights. The total monetary benefits from access to and use of genetic resources are shared with stakeholders as follows: Suppliers are Commune People's Committees, Nature Reserve management units, owners of gene storage and preservation establishments under state management, biodiversity conservation establishments, scientific research and technology development establishments assigned by the government to receive the share of 30% of monetary benefits according to regulations; 70% of the remaining money is remitted to the state budget for use in conservation and sustainable use of biodiversity; Suppliers are organizations, households and individuals assigned to manage genetic resources to receive the share of 50% of cash benefits in accordance with regulations; the remaining 50% of the proceeds will be remitted to the state budget for use in conservation and sustainable use of biodiversity.

The distribution of the non-monetary benefits arising from the use of genetic resources as agreed by the parties and recognized in the contract. Those who receive non-monetary benefits include: The domestic partner supplier of the accessing party, who is a foreign organization and other related organizations and individuals. When publishing scientific research results or registering for establishment of intellectual property rights over creative results from the use of genetic resources, organizations and individuals must clearly state the origins of the accessed genetic sources.

PROPOSAL OF SOME SOLUTIONS TO MANAGE GENETIC RESOURCES

Biological genetic resources are national assets, the basis for socio-economic development, environmental protection, security and national defense. Therefore, it is necessary to consider genetic resources, either in nature or man- made by knowledge and creative labor in ecosystems, to be precious assets, important advantages to leverage competitive strength in economic sectors, in start-ups based on biological resources. In order to effectively manage genetic resources and to have mechanisms in the benefit-sharing from genetic resources, in the coming time, a number of solutions should be implemented:

Application of advanced techniques suitable to the climatic conditions of Việt Nam in order to raise the effectiveness of detecting and assessing scientific properties and the real value of genetic resources, especially valuable and endemic ones. At the same time, clear identification of precious, endemic genetic resources, and the traditional knowledge related to the existing genetic resources is necessary as the basis for management of, accessing to genetic resources and benefit- sharing from genetic resources.

Establishment of a national comprehensive database of genetic resources in Việt Nam, distribution characteristics, status, and traditional sources of knowledge related to biological genetic resources, especially precious and endemic genes as the basis for conservation and development.

Application of biotechnology (gene technology, cell technology) to transform genetic sources of high economic values into commodity products circulated in the domestic and international markets, bringing practical benefits to the related parties (government, scientists, owners of genetic resources, producers, policy makers, communities...)

Investment in science and technology training, finance, equipment and infrastructure for scientific and technological research in service of survey and assessment for the conservation, management and use of genetic resources in a wise and sustainable manner in Việt Nam. Considering investment in conservation and development of genetic resources is the investment of national resources.

Granting of land use rights (where genetic resources of animals, microorganisms, fungi… are kept) on a long-term basis for individuals and conservation organizations, integrating conservation policies with scientific and technological policies to promote the potential of genetic resources in agriculture, rural development, industry, urban eco-cities and biological geographic areas.

Adopting of special incentive mechanisms for enterprises and individuals to invest in the conservation and development of genetic resources of high economic value for production processes, and hunger elimination and poverty alleviation.

Strengthening of communication activities to raise awareness of communities, especially in mountainous and island areas, about the significance and importance of conservation and use of biological genetic resources in sustainable development■

Improving the efficiency of integrated municipal solid waste management in Việt Nam

Lê Văn Kha
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▲ *The 3rd Joint Coordination Committee Meeting of the Project "Strengthening the capacity of integrated municipal solid waste management in Việt Nam" was held in August 2016.*

In the past time, with the strong population growth and the formation and development of production sectors, the demand for commodities, raw materials, and energy, and the generation of solid waste have increased. In addition, the management and treatment of solid waste in our country has not focused on solutions to reduce, reuse, recycle and recover energy from waste, which results in environmental pollution. Therefore, strengthening the capacity for integrated municipal solid waste management is of great importance in improving the efficiency of solid waste management and improving environmental quality in Việt Nam.

According to the National State of Environment Report in 2016 - with the topic of "Urban environment" prepared by the Ministry of Natural Resources and Environment, the status of municipal solid waste generation and treatment in the urban area remains one of the emerging environmental issues over the past years. According to statistics, the generated domestic solid waste in the urban area is about 38,000 tons/day, with an average increase rate of 12%/year. Urban domestic solid waste has an organic proportion of about 54 - 77%, recyclable waste (plastic and metal components) is of about 8 - 18%. Generated medical solid waste is 600 tons/day with an increase rate of about 7.6%/year. Regarding industrial solid waste in the urban area, there is no specific statistics, but the volume is increasing, mainly from mechanical, textile, footwear and foodstuff industries. Estimated ratio of hazardous waste in industrial solid waste accounts for about 20 - 30%.

According to the report, the results of classification, collection and treatment of solid waste have been achieved to some extent. The average domestic solid waste collection and treatment proportion was about 85% in 2014 and increased up to 85.3% in 2015. The common domestic solid waste treatment technology is landfilling, composting and burning. In urban areas, domestic solid waste proportion for landfilling is approximately 34%, domestic solid waste proportion for recycling at treatment facilities is about 42% and the remaining landfilled solid waste is the residue of treatment processes, accounting for approximately 24%. The majority of municipal domestic solid waste is not separated at source. For medical solid waste, more than 90% of hospitals carried out collection and classification of waste at source, with a collection ratio of over 75% (2015). Beside achievements, the classification, collection and treatment of solid waste has some limitations such as high number of unhygienic landfills, lack of wastewater and emission collection and treatment system, resulting in environmental pollution. In particular, the habit of using plastic bags in our country has led to large amount of inorganic waste... By 2015, the country has about 35 solid waste treatment plants (not including about 50 incinerators with capacity of about 500 kg/hour), concentrated in urban areas, with an average capacity of 100 - 200 tons/day. Compared with 2012, the treated solid waste has increased by about 3,600 tons/day, but if compared to the current increase level of municipal solid waste, the solid waste treatment has not been as effective as expected.

In order to put in place integrated municipal solid waste management at a national level according to the National Strategy on Integrated Solid Waste Management, the Department of Technical Infrastructure (Ministry of Construction) and the Japan International Cooperation Agency (JICA) in Việt Nam have cooperated to implement the project on "Strengthening the capacity of integrated municipal solid waste man-

agement in Việt Nam". The project was implemented from April 2014 to March 2018, with pilot activities in Hà Nội and Thừa Thiên - Huế province. The project has such components as institutional and management capacity strengthening, policy formulation on solid waste management; support to amend and perfect legal documents and technical standards on solid waste management; capacity strengthening of local authorities for solid waste management and technical assistance in developing the Master Plan in the Integrated Solid Waste Management…

After 4 years of implementation, the project has supported the Ministry of Construction to review the policies, regulations, institutional framework and standards for municipal solid waste management; to review and evaluate traditional and modern technologies in terms of treatment and management, and recommend appropriate technology selection criteria; to guide the planning on construction of municipal solid waste treatment facilities; to strengthen the capacity to inspect and supervise the management of municipal solid waste in localities; to collect data aiming at strengthening municipal solid waste management at the central level, to analyze and assess the existing problems. On the other hand, to study the investment and management models applicable to the construction of complexes for solid waste treatment; to study and guide the planning of construction of inter-provincial municipal solid waste treatment complexes; to organize training on strengthening municipal solid waste management in terms of institutional framework, management mechanism, technologies and responsibilities of stakeholders; to give comments on the draft of the revised National Strategy for Integrated Solid Waste Management to 2025 with a vision to 2050.

Along with that, the project has strengthened the capacity of the Hanoi Department of Construction in municipal solid waste management; evaluating the results of the project (Phase 1) from a sustainability perspective of the activities and analyzing the current status of the city's solid waste management system; identifying lessons learned and making recommendations; consulting on implementation of Master Plan (M/P) on Solid Waste Management of Hà Nội; technically consulting on the selection of solid waste treatment areas under the M/P on Solid Waste Management of Hà Nội and conducting pre-feasibility studies for selected solid waste treatment areas; studying and attracting investment in the construction of solid waste treatment areas... The project has also supported Thừa Thiên - Huế province to complete the data aggregation and develop the Province's M/P on Integrated Solid Waste Management. The M/P includes detailed and specific calculation of waste volume generated per capita based on the data of the provincial weighing station; forecasting the amount of waste generated in the coming years. In particular, Thừa Thiên - Huế has conducted planning of 3 waste collection areas in the province; calculating transport modes, waste treatment technologies and financial resources as well as related institutions and policies to implement the planning.

▲ *Waste separation at source - an important step in the treatment of municipal solid waste*

In addition, the project has completed 6 guiding documents including: Preparation of M/P on integrated solid waste management, focusing on domestic solid waste; Preparation of medium-term and long-term development plans for solid waste treatment facilities; Selection of appropriate technologies for domestic solid waste treatment; Planning on the construction of solid waste treatment facilities; Investment in constructing and managing the operation of domestic solid waste treatment facilities; and Sustainable financial system for solid waste management. The project has also disseminated the products and delivered the results to the localities throughout the country.

In general, the activities of the project have had a profound impact on localities through the collection of solid waste management data, technical seminars, training programs in Japan and in the country, experience sharing… contributing to raising awareness and responsibility in environmental protection by managers, enterprises operating in the field of environment and the community■

Some regulations on assessment of the assimilative capacity of rivers and lakes

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On December 29, 2017, the Ministry of Natural Resources and Environment (MONRE) issued Circular 76/2017/TT-BTNMT regulating the assessment of the assimilative capacity of rivers and lakes (Circular No. 76/2017/TT-MTNMT in order to satisfy the requirements of state management of water resources in the current period. Circular No. 76/2017/TT-BTNMT enacted on 1/3/2015 and replacing the Circular No. 02/2009/TT-BTNMT dated 19/3/2009 regulates the assessment of the assimilative capacity of water bodies (Circular No. 02/2009/TT-BTNMT).

THE NECESSITY OF THE PROMULGATION OF CIRCULAR NO. 76/2017/TT-BTNMT

Law on Water Resources No. 17/2012/QH13 dated 21/6/2012 stipulates that "the identification of assimilative capacity of water sources and the creation of zoning map on the wastewater receiving areas of water bodies" is one of the basic survey activities (Article 12). MONRE is responsible for implementing the baseline survey of water resources (Article 13). Along with that, Law on Environmental Protection No. 55/2014/QH13 dated 23/6/2014 regulates that "survey and assessment of the assimilative capacity of rivers; announcement of river sections and rivers that are no longer capable of receiving wastes" is one of the contents on control and treatment of water pollution in river basins (Article 53 of the Law on Environmental Protection).

On the other hand, Circular No. 02/2009/TT-BTNMT dated 19/3/2009 by the Minister of Natural Resources and Environment has stipulations on the assessment of assimilative capacity of water bodies (Circular No. 02/2009/TT-BTNMT) that were formulated and implemented in accordance with the Law on Water Resources in 1998. In reality, the provisions of Circular No. 02/2009/TT-BTNMT do not have sufficient basis for management of the discharge of wastewater into water bodies according to the Law on Water Resources in 2012. Therefore, it is necessary to amend and supplement the contents of Circular No. 02/2009/TT-BTNMT to be suitable for the descriptions of the Law on Water Resources in 2012, the Law on Environmental Protection in 2014, the current legal documents, as well as the actual situation. The issuance of Circular No. 76/2017/TT-BTNMT has met the requirements of state management of water resources in the current period.

SOME PROVISIONS OF CIRCULAR NO. 76/2017/TT-BTNMT

According to Circular No. 76/2017/TT-BTNMT, the assessment of the assimilative capacity of rivers and lakes must ensure the principles of river basin and water body-based system. The water bodies such as rivers, streams, channels and canals (rivers) must be divided into river sections for evaluation when the assessment of assimilative capacity is implemented. The segmentation of rivers, identification of water use purposes, selection of flow rates, selection of surface water quality parameters and pollution parameters of wastewater sources in order to assess the assimilative capacity of each section of the river must ensure the system of each river and river sections. The assessment of the assimilative capacity of rivers and lakes must be conducted for each pollution parameter. The assessment of the assimilative capacity of rivers and lakes must be based on the characteristics of use purposes, self- cleaning capacity of water bodies, the scale and characteristics of current wastewater sources and socio-economic development planning.

Water bodies that must be assessed of assimilative capacity include: Rivers on the list of inter-provincial and inner-provincial river basins; inter-state, inter-provincial and inner-provincial water bodies; and lakes on the list of inter-provincial and inner-provincial water bodies that were promulgated by competent state agencies. For water sources not in the aforesaid cases, the competent agencies shall approve the assimilative capacity, consider and decide the assessment of the assimilative capacity on the basis of the importance of water sources for socio-economic development, the requirements for the protection of water resources and the environment, the preservation of biodiversity, and cultural values related to water sources.

The segmentation of rivers to assess the assimilative capacity of rivers is conducted on the following bases: Location of integrating and separating streams in rivers; function of water sources, purpose of water use; location of works for exploitation and use of water resources, discharge of waste-

water; location of reservoirs, water regulation works in the rivers; the maximum length of salinity intrusion for the salinity of 4.0 ‰ for tidal affected river sections; the requirements on conservation and development of aquatic ecosystems, historical values, culture, tourism and beliefs related to water sources. For inter-state and inter-provincial rivers, apart from the above-mentioned regulations, the national border and administrative boundaries of province must also be taken into account.

Methods of assessing the assimilative capacity of rivers include:

Direct assessment method: Assessment of the assimilative capacity of rivers is conducted on the basis of maximum threshold of each assessment parameter based on technical regulations in surface water quality, flow rate and result of water quality analysis of river sections. Direct assessment method is applied to those river sections that do not receive any directly-discharged effluents, which shall be confirmed through surveys.

Indirect assessment method: Assessment of the assimilative capacity of rivers is conducted on the basis of maximum threshold of each assessment parameter based on technical regulations for surface water quality; flow rate and result of water quality analysis of river sections; flow rate and result of analysis of wastewater sources into the river sections.

Modeling assessment method: Assessment of the assimilative capacity of rivers is conducted on the basis of maximum threshold of each assessment parameter based on technical regulations for surface water quality; flow rate and result of water quality analysis of river sections; flow rate and result of analysis of wastewater sources into the river sections; and the process of merging and changing of the pollutants.

The evaluation parameters of the assimilative capacity of rivers and lakes are COD, BOD_5, ammonium, nitrate, phosphate, etc. Besides, competent agencies approving the assimilative capacity also must base themselves on technical regulations for surface water quality and wastewater, purpose of water use, scale and characteristics of wastewater, requirements on protection of water sources, environmental protection for each section of rivers and lakes to consider and decide other parameters to have suitable assessment.

MONRE is responsible for approving the assimilative capacity of rivers and lakes that are inter-provincial and inter-state water bodies. Accordingly, the Department of Water Resources Management presides and coordinates with Vietnam Environment Administration to assist MONRE in organizing the investment and assessment of the assimilative capacity of rivers and lakes that are inter- provincial or inter-state water bodies, and consulting with ministries including Ministry of Industry and Trade, Ministry of Agriculture and Rural Development, Ministry of Transport, Ministry of Construction, Ministry of Culture, Sports and Tourism, provincial People's Committees, agencies and units related to the assessment result of the assimilative capacity of rivers and lakes; synthesizes and completes the dossiers and submits them to MONRE for consideration for approval.

▲ *Assessment of the load capacity, ability to receive wastewater of rivers and lakes must ensure the principles of river basin and river source system*

The People's Committee of provinces and centrally-run cities is responsible for approving the assimilative capacity of rivers and lakes that are inner-provincial water bodies. Accordingly, the Department of Natural Resources and Environment of provinces and centrally-run cities assist provincial People's Committees in organizing the investment and assessment of the assimilative capacity of rivers and lakes that are inner-provincial water bodies, consulting with departments including Department of Industry and Trade, Department of Agriculture and Rural Development, Department of Transport, Department of Construction, Department of Culture, Sports and Tourism, People's Committees of districts, towns and provincial cities, agencies and units related to assessment result of the assimilative capacity of rivers and lakes; collects all opinions and then sends them to the MONRE for comments; finalizes the dossiers and submits them to the provincial People's Committees for consideration and decision on approval.

Water pollution control is an important part of state management of environmental protection, which has been proved by international experience and management practices in Việt Nam. The issuance of Circular No. 76/2017/TT-BTNMT is an urgent requirement and meets the requirements of the state management of water resources in the current period. However, in the forthcoming time, it is necessary to strengthen measures of monitoring and implementation to prevent and minimize the non-observance of regulations on discharge of polluted water into rivers and lakes that causes environmental pollution■

Government imposes fines for damaging trees

Individuals or organizations who are found to cause damage to trees will be fined up to 30 million VND (1,300 USD) from January 15, says a new Government decree.

Under Decree No 139/2017/NĐ-CP, the fine will range from 500,000 VND - 1 million VND for activities such as nailing trees, picking flowers, cutting branches and peeling tree barks.

The same fine will be imposed for building illegal fences around trees along streets, in parks or other public areas; grazing animals and poultry in parks; and hanging lights or advertising boards on trees in public places without permissions.

An administrative fine of 10-15 million VND will be levied on violations such as dumping household, toxic or construction wastes on the foot of trees, damaging and hindering the development of trees in urban areas and growing banned trees without the permission of authorized agencies. Those who are caught cutting, removing or burning tree roots or digging the foot of the trees will be fined between 20-30 million VND.

Apart from the administrative fine, violators will also be required to recover the damaged trees or remove boards and lights■

Quang Ngọc *(VNA source)*

Prime Minister approves waste database

Prime Minister Nguyễn Xuân Phúc has approved a project that would build a national database of waste resources, helping authorized agencies better control the discharge of waste nationwide.

According to the newspaper Diễn Đàn Doanh Nghiệp (Business Forum), the project will conduct surveys, assessments and classify waste resources around the country, as well as their environmental impacts. Based on the study, authorized agencies will develop mechanisms and policies to better control waste resources.

The development of the database on waste resources will include the building of an overall structure of waste resources. Of that, a database on waste resources will be located at the Ministry of Natural Resources and Environment and linked to ministries, sectors and localities; and a database on waste resources under the management of the Ministry of Public Security and the Ministry of National Defence.

The implementation of surveys, assessments and classification of waste resources and the development of databases on waste sources must be carried out according to a specific plan, and will be closely monitored and supervised during the time of implementation. Results from last year's economic survey and other relevant surveys should be used as reference for the process.

The waste resource database must be scalable, flexible, and ensure connection from central to local levels in line with the e-government framework.

It was necessary to review and promulgate legal documents and regulations for the management, exploitation, operation, updating and use of information from the database on waste resources. The project will be implemented from now until 2021.

Waste discharge from factories in industrial and economic zones, or private businesses, have become issues of public concern due to pollution levels and severe consequences, affecting the livelihoods of people and other economic sectors.

In HCM City, 10 industrial zones and 3 export processing zones discharge about 32,000cu.m of industrial waste every day. All industrial parks and export processing zones have built waste treatment systems, but pollution in the surrounding area still occurred due to the weak monitoring on the operation of waste treatment facilities.

In Hà Nội, 19 out of 43 industrial zones still lack wastewater treatment systems. Worse, 4 out of 24 zones equipped with waste treatment systems have substandard systems and 5 have not yet put their systems into operation.

Nguyễn Phong, former director of the General Statistics Office's Department of Social and Environmental Statistics, said that it was necessary to unify the national database on waste resources. In addition, the project should take into account the challenges and risks of results from the surveys as the quality of self-reported surveys were the least effective. He also added that software systems that could link to monitoring stations at emission sites would be more effective■

Phương Hạnh *(VNA source)*

Investment conditions in environmental resources to be simplified

The Ministry of Natural Resources and Environment (MONRE) is drafting a revised decree to amend some articles of the decrees related to investment conditions within the scope of state management functions of the Ministry.

Accordingly, the business investment conditions will be reviewed to reduce and simplify in order to create favorable business investment environment for enterprises. About 46.64% of investment conditions in the field of natural resources and environment will be reduced and simplified under 18 conditional businesses attached to the Annex 4 in the Investment Law.

On the other hand, in recent years, the MONRE has coordinated with the Ministry of Planning and Investment to reduce conditional businesses in the revising process of Annex 4 of the Investment Law. With an aim to create a favorable business environment for enterprises timely, the MONRE proposed to draft a decree revising a number of articles of the decrees relating to business investment conditions under the scope of the Ministry's State management■

Sơn Tùng *(VEA source)*

Issue set of urban green growth indicators

From 20/2/2018, the Circular No. 01/2018/TT-BXD issued by the Ministry of Construction on urban green growth indicators took its official effect.

The urban green growth indicators are divided into 4 groups (24 indicators). The economic group, including 5 indicators, aims to assess efficiency of economic growth in term of using energy and resources in urban construction and development; environment group, including 10 indicators, aims to assess the environmental quality and urban landscape, application scale of solutions for energy efficiency, using renewable energy, environmental protection, pollution reduction greenhouse gases mitigation in urban development; social group, including 4 indicators, aims efficiency in improving quality and living conditions of urban citizens…

These indicators are a basis for urban areas to propose its prioritized activities in building green growth urban areas; review and regulate specific indicators in urban planning and urban development programs... contributing to complete green growth goals of localities and the country■

Hoàng Đàn *(VEA source)*

Construction ministry cracks down on pollution

Construction investors are often totally indifferent to the storm of dust, construction waste and general filth their projects unleash on the general public. The Ministry of Construction has taken an action as drastic as the neglect of these investors and their greedy firms.

To control the environmental pollution at the construction sites, the Ministry of Construction issued the Circular No. 02/2018/TTBXD that will come into effect from April 1. The circular enhances the responsibility of the construction owners in the field of environmental protection and strictly punishes wrongdoings.

In particular, it will require enterprises to make reports on their environmental impact assessments, environmental protection plans and environmental protection commitments as prescribed.

The investors will be forced to suspend construction if relevant authorities find violations of labor safety regulations, environmental pollution or the risk of environmental incident.

Therefore, when the law allows the application of measures to suspend construction, the investors will be forced to obey regulations on shielding the site and washing the vehicles before leaving the sites■

An Vi *(VNS source)*

The necessity to develop a scientific research program on the biodiversity of the Annamite Range

The work on biodiversity conservation of the Annamite Range (aka. Truong Son Cordillera), which is prepared by Dr. Nguyễn Ngọc Sinh - President of Vietnam Association for Conservation of Nature and Environment (VACNE) as Chief Editor and his editing team members, has been honored to receive the Vietnam Talent Award for Environmental Affairs in 2017. On this occasion, the Environment Administration Magazine had a talk with Dr. Nguyễn Ngọc Sinh on the values and significance of the Annamite Range biodiversity conservation scientific work.

▲ *Secretary of the HCMC Party Committee Nguyễn Thiện Nhân and Minister of Natural Resources and Environment Trần Hồng Hà have presented the award to Dr. Nguyễn Ngọc Sinh*

✶***VEM: Could you please tell us about the scientific work of biodiversity conservation of the Annamite Range?***

Dr. Nguyễn Ngọc Sinh: The scope and characteristics of biodiversity of the Annamite Range, and how it plays a role in nature conservation, in socio-economic development, environmental security and sustainable development of the countries on the Indochina Peninsula... are the contents of 3 consecutive international scientific conferences from 2009 - 2010. Through these workshops, many high quality scientific reports from domestic and foreign scientists have contributed to clarifying these important issues.

VACNE has organized the compilation of a book on biodiversity conservation in the Annamite Range, based on the selective extraction of the scientific reports of the 3 workshops. This includes the additional studies by editing team members. The book is a positive response from VACNE to the International Year of Forests 2011. As the objective is to serve the public, the book has a simple, easy to understand, and appropriate way of expression to the public. This is a practical contribution to the nature and environmental conservation of this stunning mountain range, contributing to filling the immense gaps in many aspects of the preservation and development of diverse resources, including biodiversity resources of the Annamite Range.

The book consists of 4 main sections, covering geographical identification, natural distribution of the Annamite Range, world heritages and inhabitants of the Annamite Range (Section I), rich diversity of organisms the Annamite Range (Section II), serious threats to Annamite Range biodiversity (Section III), the urgent actions on Annamite Range biodiversity conservation towards sustainable development (Section IV). The contents of the book are not a simple compilation of existing materials, but rather a new interpretation of the legendary Annamite Range, as well as providing additional materials.

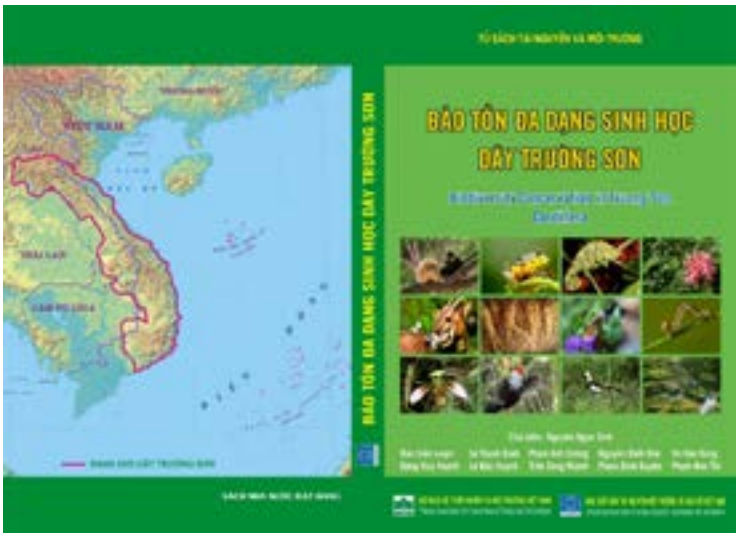
✶***VEM: Can you share about the outstanding values of the Annamite Range shown in this work?***

Dr. Nguyễn Ngọc Sinh: The Annamite Range is the backbone of the Indochina Peninsula, located across the 3 countries of Việt Nam, Laos and Cambodia with the length of 1,100 km and a total area of over 22 million hectares, divided into 2 principal areas, the Northern Annamite (Bắc Trường Sơn) and the Southern Annamite (Nam Trường Sơn) with a narrow buffer zone in between, extending from Bạch Mã range and Ngọc Linh range. This is the meeting place of 2 large bio-geographical regions: The tropical monsoon region in the North and the typical tropical region in the South. The Annamite Range incorporates both fauna and flora elements of both regions, with high diversity of habitats, from monsoon tropical evergreen forests on karst and granite to dipterocarp forest ecosystems, coniferous forest ecosystems to arid savanna ecosystems.

Not only is it the region of international importance for biodiversity, the Annamite Range also has important values in terms of socio-economic development, environmental security, mitigation of climate change impacts, connecting the center of the Indochina Peninsula with the Indochina Sea, connecting the 2 ends of the country, a unique cultural cradle, and home to many ethnic groups in the Indochina Peninsula. Although still poor, many ethnic minority communities reside in the Annamite Range have created a variety of adaptive cultures, with customary rules that strictly regulate human behaviors on nature. Many established Biosphere Reserves, National Parks and Nature Reserves in the Annamite Range indicate the effectiveness of these indigenous knowledge treasures.

The biodiversity of the Annamite Range is closely linked with environmental security. The Annamite Range ensures water resource security, provision of shelters and local cultures, control and prevention of disasters such as floods, landslides, erosion and land accretion; supply of wood and non-wood products; creation of local climate regimes, thereby creating precious gene sources, indigenous groups of plants and animals, natural enemies for safeguarding agriculture and fisheries... It can be said that any changes in the natural conditions in the Annamite Range are accompanied by changes in the areas in the foothills of the mountain. It is easy to see that the plans for resource extraction on the Annamite Range are a trade- off for the livelihoods of the local population in the area.

The Annamite Range plays an irreplaceable role in the face of climate change threats. The Annamite Range creates the inertness of the local climate that slows down the negative impacts of climate change. Forest vegetation in Annamite Range slows down and alleviates the flooding process, dissolves storms, and slows down the desertification process. Medicinal resources, genetic reserves and natural enemies have the potential to mitigate the disease epidemics on human, animals and plants caused by climate change. Continuous elevation of modern geological foundation in the Annamite Range area (excluding estuaries) contributes to reducing or even eliminating the risk of rising sea levels in many coastal areas in Central Việt Nam. With an estimated area of 11 million ha, if only



50% of the fareas are covered with woody plants, it could trap 22 - 25 million tons of CO_2 annually, contributing significantly to reducing the global warming effect without any investment except for forest protection.

✶VEM: What are your suggestions and recommendations to protect the Annamite Range in the coming time?

Dr. Nguyễn Ngọc Sinh: What has happened in Việt Nam show that development is destroying the Annamite Range for individual targets of sectors and localities. Management has not kept pace with exploitation and use. Conflicts between provinces sharing the water resource from the Annamite Range is expanding; others include conflicts between upstream mineral exploitation and processing activities, construction of hydroelectric dams upstream and protection of water sources for downstream areas; conflicts between rubber plantation and natural forest protection; conflicts between nature reserves and tourism development and exploitation of forest products... The warnings are abundant about the scattered development that benefits one while harming others in the Annamite Range.

The situation shows that as long as the spontaneous development as currently in the Annamite Range in Việt Nam continues, the sustainable development of the provinces in the Annamite Range, in general, and biodiversity conservation of the Annamite Range, in particular, cannot achieve their goals Developmental activities lacking an integrated management strategy on the entire Annamite Range is an early warning of environmental disasters in the mountains and associated sub-tropical and coastal areas. This is a big strategy which requires the direction and investment of the Governments of the 3 Indochina countries, the participation of localities within the Annamite Range, the sectors and scientific organizations inside and outside the country, and local communities.

Due to the lack of a comprehensive and unified strategy, Annamite Range is now being left open for invasive species such as Mimosa (*Mimosa pigra*), woodrose (*Merremia boisiana*), yellow snail, wild sage (*Lantana camara*),

pine caterpillars... In order to develop an appropriate integrated management strategy, 2 priority tasks implemented are the scientific research program on the biodiversity of the Annamite Range to fill in gaps in the knowledge, and research to develop appropriate conservation management strategies. It can be understood that the strategy should be all-encompassing, but in the current situation, it is not possible to quickly have a strategy; and even if a strategy is available, the implementation would face with many problems. Therefore, the conservation of the Annamite Range should be considered as a priority.

The Annamite Range is the backbone of the Indochina Peninsula, so it is necessary to have a close cooperation between the 3 countries of Laos, Cambodia and Việt Nam in the field of biodiversity conservation, especially in the study and protection of trans-boundary nature reserves. The Annamite Range is not only a valuable resource of Việt Nam but also a common property of humanity. International collaboration and assistance on experience, science and technology, conservation staff training and funding are also essential. There should be international and regional projects for the conservation of the Annamite Range biodiversity, involving the 3 countries of Laos, Cambodia and Việt Nam, creating a common forum for conservation of the Annamite Range, organizing regional seminars (ASEAN), international conferences, scientific research programs and management, training and implementation of conservation activities... are probably the necessary steps.

✶***VEM: Thank you!***

Nguyên Hằng *(Implemented)*

Maximize values of Vietnam's 9 biosphere reserves

Nguyễn Hoàng Trí - *Chairman*
National Committee for Vietnam Man and Biosphere Programme (MAB Vietnam)

Over the past 10 years, 9 biosphere reserves of Việt Nam have been recognized and admitted into the network of 699 biospheres located in 120 countries.

Each biosphere reserve not only contributes to the sustainable development of that particular country but also to the sustainable development and bright future of the world, in which ecotourism is seen as an economic sector based on natural and environmental preservation and the principle "preservation and development come together".

The 9 biosphere reserves of Việt Nam are located along the country in specific eco-geographical areas, each of which contains its own unique features of nature and culture. Thus, tourism products offered by these biosphere reserves are quite attractive to travellers for sightseeing, exploring nature, doing scientific researches and studies as well as for leisure. Travellers can take a tour through all nine biosphere reserves, especially the study tour that focuses on archipelago, ocean, marine preservation, geology and biodiversity. There are other tours that take them to the forests and areas rich in local culture, tradition and history and enrich them about the lifestyle of the local people. Organizing such tours through the biosphere reserves will help make the operation and management of these reserves comprehensive and consistent.

Market researches have shown that ecotourists are quite keen on studying wildlife and nature. According to the 5th Convention on Biological Diversity, ecotourism is the sole tourism model that can educate tourists about the values of a healthy environment and biodiversity. There are plenty of opportunities for ecotourism the coun-

▲ *Cát Bà Archipelago Biosphere Reserve (Hải Phòng)*

try, given the existing biosphere reserves, natural heritages and geoparks. However, it is important to have a plan to manage the development of ecotourism so that it does not damage the biodiversity.

Due to the lack of understanding, knowledge and ignorance of possible long-term consequences, some fake tourism projects that appear in the form of ecotourism with resorts, high-end hotels, cable cars and concretization will cause both short-term and long-term consequences for vulnerable primitive ecosystems and will damage the environment, based on which real ecotourism is developed. Such projects will result in the loss of biodiversity and living conditions for animals, trees

SPECIFIC FEATURES OF THE 9 BIOSPHERE RESERVES IN VIỆT NAM

The management and monitoring of biosphere reserves should be implemented across all sectors based on the principles "Development and preservation come together" and "Systematic planning, intersectoral coordination and efficient operation". This has been the guideline for sustainable management of all biosphere reserves.

• Cần Giờ Saline Forest Biosphere Reserve (Hồ Chí Minh City)

This is "the most beautiful recovered saline forest in Southeast Asia" featuring characteristics of a typical saline forest; local people live at the estuary and coastal area of the Southern delta region.

• Đồng Nai Biosphere Reserve (located in the provinces of Lâm Đồng, Bình Phước and Dắk Lắk)

With the slogan "Where nature, culture and history meet", the biosphere reserve is home to many wild species and long-standing community cultures, such as the typical Óc Eo culture and the culture of the South Central Highlands' people, as well as the historical site of D Base.

• Cát Bà Archipelago Biosphere Reserve (Hải Phòng)

The karst island is home to an evergreen forest, which is an important element of the entire Ha Long Bay. This bay is also a geological wonder and home to the Cat Ba white-headed langur. This area has the remains of the ancient Viet people. Local people make their living from agriculture and fishery as well as produce valuable local specialties. The reserve is rich in marine culture and history.

• Red River Delta Region's Interprovincial Coastal Wetland Biosphere Reserve (located in 3 provinces of Thái Bình, Nam Định and Ninh Bình)

This is home to the Spoonbill that migrates between Asia and Australia. The reserve has been created from the Red River's alluvial warp in the coastal area, has a saline forest and diversified ecosystem to suit certain bird species. Local people explore the coastal and estuary area, establishing coastal culture along with the Northern and Red River delta regions' culture and diversified coastal villages.

• Kiên Giang Biosphere Reserve (coastal region and islands of Kiên Giang Province)

This is a natural landscape with the largest archipelago of Phú Quốc in Việt Nam. The reserve has diversified geological landscape, tropical rainforests and wildlife habitats in forests as well as in the sea. It's history, culture and socio-economic development are similar to that of the southwest coast region.

• West Nghệ An Biosphere Reserve (mountainous districts in the west of Nghệ An Province)

Located in the mountainous area of North Trường Sơn and the upstream of Cả River, this reserve has diverse landscape, evergreen forests, rich biodiversity, rare wild species and a diverse local community following the typical Thai culture and living in harmony with nature. The people make many local value-added products.

• Chàm Islands - Hoi An Biosphere Reserve (Quảng Nam Province)

It consists of evergreen natural forests, typical marine habitats, geological tectonics and magnificent landscapes. The island has had a long-standing community, with international trade routes, townships, typical island townships, besides cultural identity, festivals and unique villages.

• Cà Mau Cape Biosphere Reserve (Cà Mau Province)

This peninsula has alluvial sediment encroaching on the Mekong, besides typical acacia mangrove forest. The local community is involved in farming, fishery and forestry.

• Langbiang Highland Biosphere Reserve (Lâm Đồng Province)

This natural landscape features a 2-leafed flathead pine forest with historical evidence of devon; Cultural space of Central Highland gong harmonious with the bio-diversity; Ethnic diversity space is based on natural landscape space; The people need to pay for ecosystem services, being a typical conservation-based economy.

▲ *West Nghệ An Biosphere Reserve*

and plants while also disposing unprocessable wastes that can have negative impacts on the surrounding environment. Moreover, there are concerns regarding the social inequality among stakeholders in the ecotourism sector.

Besides, local community is the entity that either benefits or suffers the most from the development of these fake ecotourism projects. While globalization makes it difficult for local governments to monitor the economic development of their local areas, ecotourism, in contrast, addresses corporates and local communities as the most important factors. More farmers and local people participating in eco-tourism activities can be quite promising, but it can also pose potential risks unless the subjects are well-prepared for tourism activities. Local people should be informed of the pros and cons brought about by eco-tourism development and should be persuaded to agree on the development of ecotourism in their living areas.

It is difficult to quantify ecotourism as it aims to preserve nature and develop the local community further. Some researches that previously calculated the number of ecotourists have helped motivate other travellers to undertake eco tours, which are carried out based on the principles of ecotourism.

When the study of ecotourism becomes broader to the extent of natural exploration, it has often led to wrong assumption of the market size (demand). The study of tourism for natural exploration has shown that 50 per cent of the clients want to travel to completely natural places so that they can spend at least a day at a national park.

The ecotourism segment is quite huge and different from the one that actually benefits small groups of tourists those who can learn about local culture and wildlife with the help of local guides to help preserve and develop the local community sustainably.

However, there are some travel agencies that are not capable of guiding tourists in most of the local communities. Some researches have pointed out that ecotravel agencies must find ways to work with local non-governmental organizations and assist in the development of local communities so that they gain full support for sustainable tourism policies.

Ecotourists often want to go to places where they can have the closest experience with nature and the local community. The natural resources of each destination must be protected, and each eco-tourism activity should be cooperated by the local community. To further develop ecotourism in the country, the government needs to develop plans and mechanisms and create limits for eco tourism areas so that they are not influenced by the outside world.

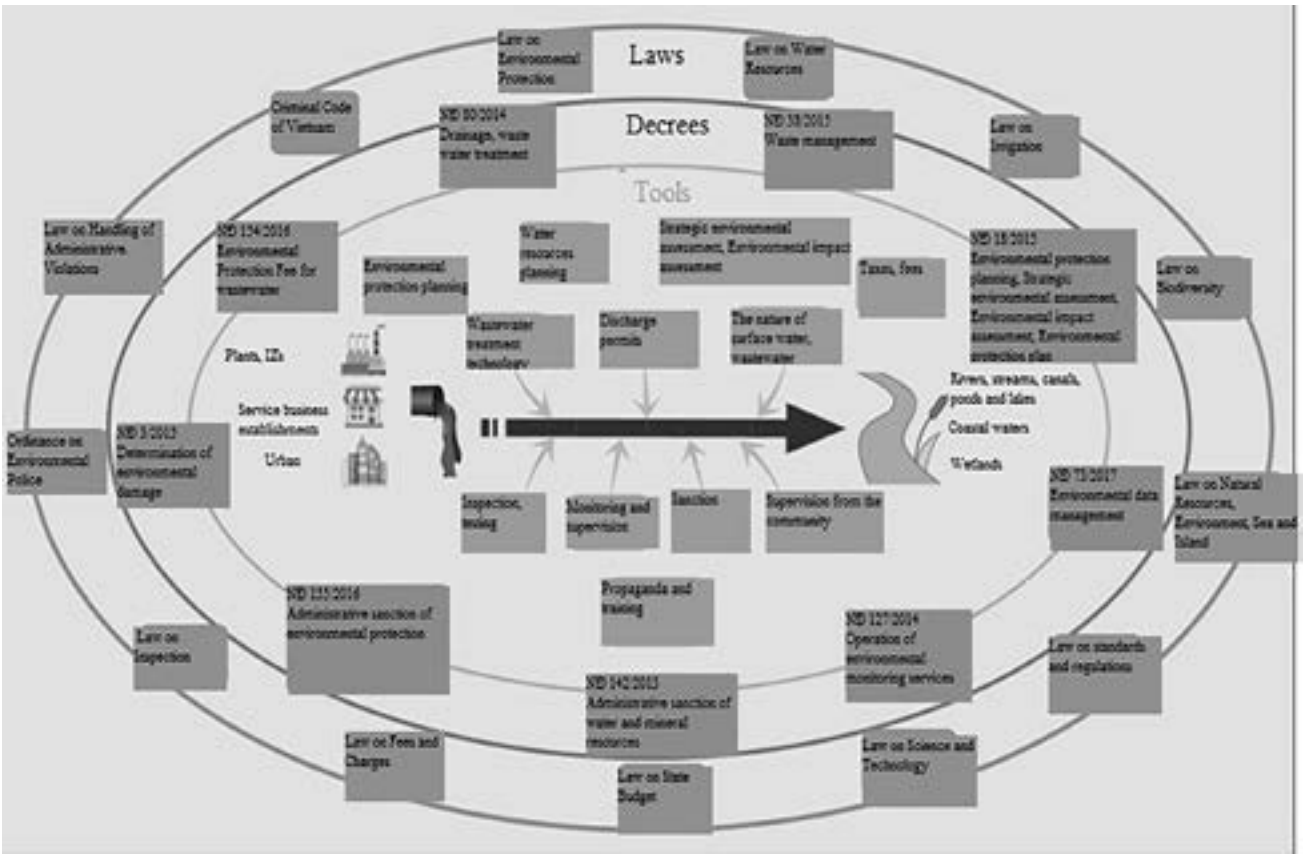
To maximize the values of Vietnam's biosphere reserves to reach their long-term efficiency and sustainability, we need to establish development standards to push the cooperation between local stakeholders, especially local communities■

Water pollution and the need for developing the Law on Water Pollution Control in Việt Nam

Nguyễn Ngọc Lý - *Director*
Center for Environment and Community Research

In the past time, water pollution has been one of the major problems and needs to be monitored closely. According to the National State of Environment Report 2012, surface water resource in our country is seriously polluted, especially in downstream areas where occurs rapid urbanization, industrialization and growth. The problem of water pollution continues to be complicated and was at peak in 2016. In April 2016, the marine pollution in the Central region of Việt Nam caused by the wastewater from Formosa, causing severe damage. The company had to compensate about VND11,000 billion for fishermen, which is 86 times more than that of Vedan. At the end of the year, more than 200 tonnes of dead fish in the West lake in the short period of time had attracted national concerns about the water pollution. Thus, it can be seen that the damage from water pollution has affected all aspects of our economy and society. The main causes for all water pollution incidents are pollutants from production wastewater, industrial wastewater, urban wastewater (point source pollution), run-off, wastewater from mining... (non-point source pollution) and from different types of waste... that are untreated and directly discharged into the surface water bodies.

So the question is what causes the serious and widespread water pollution especially when we have a legal system on environmental protection with many sanctions and participation of many agencies from central to local levels? From reality, it can clearly be seen that there are 2 overarching causes, namely, water pollution and water pollution control, which are extremely complicated and closely related to economics, society and law. The content of water pollution control covers the ecological, conservation, physical and chemical aspects of water, technological issues, standards, basin



▲ *Diagram of water pollution control system in Việt Nam*

management issues, water resource management and management capacity. Another cause is that there is no separate legal system for water pollution control to remedy water pollution within the framework of the environmental protection legal system.

1. THE LEGAL SYSTEM RELATED TO THE DISCHARGE OF WASTEWATER

Water pollution control has not been paid much attention to, in terms of its complex and important nature. The category of water pollution control has a very modest place in many laws and under different tools. The diagram of the legal system related to the wastewater discharge is generalized as follows:

From this diagram, it can be seen that the legal system has many layers (Laws, Decrees, Circulars) and tools. Tools for directly managing the discharge include planning, EIA, discharge permits, technologies, standards, monitoring and inspection... Due to such many layers, the implementation of laws and sub-law documents is largely administrative and indirect, with the participation of a large number of administrative bodies from different ministries and sectors. Sanctioning tools that directly manage the discharge have a cross-cutting relationship with the administrative system, resulting in unclear and overlapping levels of management and responsibility. In addition, this legal system only focuses on regulating the discharge of enterprises and industrial zones, but does not include the control of urban wastewater and non-point source pollution. Thus, there is a great gap between the legal system and the water pollution condition in reality. This gap can be seen through the analysis of some emerging water pollution issues in reality.

2. CURRENT WATER POLLUTION AND WATER POLLUTION CONTROL STATE IN VIỆT NAM

The first case is the water pollution of Bưng Cù stream in Tân Uyên district, Bình Dương province. The stream receives the discharge from over 200 industrial facilities and more than 1,500 guest houses and resident areas. Over the past 2 decades, this once clean stream has been severely polluted and has deep impacts on people's lives. Farmers growing rice and sweet potatoes next to the stream cannot use the stream water to irrigate crops, but must pump underground water for use. Many meetings have been held and plans have been stated, but still the problem has not been resolved.

In this case, the absence of a basin management approach is evident. The Department of Natural Resources and Environment (DONRE) has sanctions for wastewater management of local enterprises, but does not manage domestic wastewater from guest houses and the amount of solid waste discharged into the stream. The stream management responsibility is under the responsibility of the environmental management and at the ward level, there is only one officer in charge of environmental management. Under such conditions, they are only able to report to superior levels because they do not have sufficient professional, technical, managerial skills to resolve problems.

The second case is the water pollution of Pó Cá stream affecting the surface water resource of Sơn La city. In the past decade, Sơn La has succeeded in choosing coffee as the main industrial crop, contributing to economic development and poverty reduction in the locality. However, wastewater from the pre-processing of coffee from households growing and processing coffee from the upstream has become the source of pollution to Pó Cá stream and domestic water supply source in Sơn La city. When it rains, the wastewater from the ponds in the upstream overflows into the stream, causing serious pollution, and the water supply plant has to close, sometimes for several days continuously, causing the whole city of Sơn La to have no domestic water supply.

It is clear that when developing coffee trees in mountainous areas, Sơn La province has not considered the problem of water pollution caused by the dispersed coffee processing in the upstream. There is also no system of treatment technology for wastewater from the preprocessing of coffee at household level, and so far there is no sanction to resolve this problem.

The third case is the water pollution of Bốn Xã canal in Bắc Ninh. The canal is small, flowing through Khắc Niệm ward and the communes of Tân Chi, Lạc Vệ, Liên Bão, Tiên Du district. This canal receives over 3,000 m^3/day of wastewater from noodle-producing households, pig farms and domestic wastewater. In the past, the government has invested in a system of collecting and treating wastewater from noodle production, but the system has not been effective and even become a pollution source in the area. Livestock businesses have wastewater treatment systems, but the quality control of wastewater discharge is unclear. Currently, the noodle producers blame that the canal is polluted due to the wastewater from the enterprises while the enterprises say it is due to the wastewater from the noodle producers.

This case reflects issues of overlapping management, as this canal is an irrigation canal, the enterprises are granted permits for discharge by the Department of Agriculture and Rural Development while the noodle producers are not. When pollution occurs, environmental officers in the ward or district are not able to resolve and only to report to the Department of Natural Resources and Envi-

ronment. The Department of Natural Resources and Environment is not the place to issue permits for discharge to enterprises. The pollution control of discharge from noodle producers has no clear mechanism and the treatment technology of wastewater from noodle production has been ineffectively invested, even causing environmental pollution.

The final case is the marine pollution in the Central region of Việt Nam caused by Formosa Company. This is the enterprise with a large-scale FDI capital. Therefore, the environmental evaluation is a full process under national mechanisms including EIA, discharge permits, wastewater treatment technologies, inspection and monitoring. These tools are developed in accordance with the procedures of the legal system and passed through many evaluation levels. However, while this process is still in the testing phase, the pollution incident of the marine environment in the Central region of Việt Nam has caused damage to fish, marine life, marine ecosystems, people's livelihoods and marine dependent sectors.

3. THE NEED FOR DEVELOPING THE LAW ON WATER POLLUTION CONTROL IN VIỆT NAM

Based on the above- mentioned facts and the review of the existing legal system, especially the Law on Environmental Protection and the Law on Water Resources, there are a number of principal issues that are lacking in the current legal basis, including:

Water pollution and water pollution control have not been mentioned as a separate field and have not been paid proper attention for its importance in the cause of economic and social development, but have only been included as a small part in environmental protection work. That led to a three-layer system: Laws, Decrees and Circulars with many documents related to water pollution control management. The legal system is therefore very indirect and administrative, making responsibility division unclear.

The legal system is developed from the perspective of state management, but not enough attention is paid to the perspective of the regulated enterprises and urban areas, and there is a lack of the perspective of protected subjects including surface water bodies and aquatic life in the water environment. Therefore, the ecosystem and basin management approaches are not thoroughly grasped and not fully presented in the development process of laws and sub-law documents. Thus, the development of the Law on Water Pollution Control requires the survival of fish and other aquatic species to be the ultimate goal for the development of a management system.

Tools for direct control of discharge and water pollution include treatment technologies, discharge permits, standards, inspection and monitoring, which are primarily dependent on the EIA's recommendations. The dependence on the EIA will limit the effectiveness of the tools for discharge control. Although EIA is given a chapter in the Law on Environmental Protection and a guiding Decree, EIA is still very much about forecasting, which can be very different from the reality. The establishment of tools based on the EIA's recommendations can cause tremendous consequences, meanwhile it is difficult to have clear accountability.

In fact, although the EIA is a law-based process (Decree No. 18/2015 stipulates the Environmental Protection Planning, Strategic Environmental Assessment, EIA and Environmental Protection Plan), EIA reports still have to refer to many laws. Specifically, the EIA of Vĩnh Tân Thermal Power Plant still has to refer to 66 different legal and sub-law documents. That shows the complexity and ineffectiveness of the current legal system.

On the basis of assessing the actual state of the water environment; research and analysis of the legal inadequacies and gaps in the legal system, Việt Nam needs to study the development of an independent Law on Water Pollution Control to prevent water pollution and to gradually restore the surface water system. The ultimate goal of the Law is to protect the life of aquatic species and human safety. In the coming time, MONRE shall be recommended to propose the development of the Law on Pollution Control into the Legislative development program of the 14th National Assembly and shall carry out the study and development of this Law as soon as possible, estimating the amount of time necessary to ensure the implementation and economic efficiency of the Law.

In parallel with the legislative development program, it is necessary to develop and provide funding for research programs; to identify the severely polluted water areas to be prioritized for treatment; to identify long-term special water areas to be prioritized for protection and conservation; to develop and provide funding for research on the reform of the waste discharge permit issuance system, waste discharge standards, and surface water standards, including technical standards on ecosystems; to develop and provide funding for background research programs on surface water system in Việt Nam for monitoring and management of surface water quality; to provide mechanism encouraging the participation of community and stakeholders in water pollution control; to develop a long-term overall policy to be prioritized for scientific research and development of water pollution treatment technologies...■

INTERNATIONAL ENVIRONMENTAL TECHNOLOGY AND ENERGY EXHIBITION 2018:

Green Technologies and Products - Act for the Future

▲ *Opening ceremony of the International Environmental Technology and Energy Exhibition (Entech Vietnam) 2017*

The 10th International Environmental Technology and Energy Exhibition (Entech Vietnam 2018) is to take place at the Saigon Exhibition and Convention Centre (SECC) in HCM City from May 9-11, 2018. This is the only official exhibition on environmental technologies and energy to be organised in 2018 and sponsored by the Ministry of Natural Resources and Environment (MoNRE). The event will help both domestic and international companies and organisations display and introduce their advanced technologies and products that meet the demand in Vietnam's market. It is also an opportunity for businesses in the environmental protection and energy industry, especially foreign firms keen to enter the Vietnamese market, to introduce their products and for the MoNRE to review, assess and update new, advanced technologies and products coming from different parts of the world.

Sustainable development is now among the basic components to transform Vietnam's economic growth model, and it is also one of the top-priority targets that the Vietnamese economy is heading towards. In the context of deep and comprehensive integration and rising competitiveness with economic and business communities and industries, especially after Việt Nam became a member of the World Trade Organisation (WTO) and the ASEAN Economic Community, domestic and foreign enterprises are required to raise their awareness about the quality of output, increase productivity, save energy and protect natural resources and the environment, based upon the sustainable development principles. With such urgent requirements, the environment and energy industry has gained more attention from Government agencies, the business community and society.

The Vietnamese environment and energy sector has recently developed into a new market, in which domestically-made technologies have not been developed properly into private, copyrighted products and the quality of equipment has remained low, despite low production costs. On the contrary, products developed by foreign companies display their high quality, and are diversified

and copyrighted, though quite expensive. Those have brought difficulties for local companies, individuals and organisations, when seeking to choose the most applicable advanced technologies and products and apply them in the domestic market. Thus, decisive factors to determine an applicable output/technology for the Vietnamese market would be price, quality and conformity to local conditions.

To enhance the activities involved in research, application and transferring of environmental technologies in an attempt to further develop the Vietnamese environmental industry, MoNRE has assigned the Centre for Environmental Technology and Consultancy under the Vietnam Environment Administration (VEA) - in co-operation with the Global Expo and Event Joint Stock Company (GE) and the Busan Exhibition and Convention Centre (BEXCO) - to organise Entech Vietnam 2018 in order to create an opportunity for both domestic and foreign companies to display and introduce their products, eco-friendly technologies and advanced energies, as well as study market demands for eco-friendly and energy technologies and products in Việt Nam and regional markets. The event is also an opportunity for managers of energy and environmental projects to catch up with global technology developments, and study products and technologies that can meet the requirements of their projects. During this event, the Government and its agencies can also assess, select, develop and adjust the development policies for the environment and energy industry in the next socio-economic development stages. The event also focuses on the B2B, B2G and B2C models to choose the most co-operative models for the State and domestic companies' energy and environment projects. Vietnamese specialists may also consider this to be an opportunity to discuss and develop strategies, address the current demand and activities needed to promote green growth in Việt Nam, along with other countries in the region. The event is also expected to improve the awareness of the local community about environmental protection and encourage local businesses and people to produce and consume in a eco-friendlier way. Additionally, the exhibition is an occasion to honour and promote domestic producers who have developed new, high-quality and reliable made-in-Việt Nam products for both domestic and international markets, helping consumers make the right choices to purchase high-quality products and recognize prestigious providers. The following are the products and services that will be displayed at the exhibition:

Environmental processing technologies/products: Industrial waste treatment technologies (which help process solid waste, wastewater, emissions and industrial dust; handle odors and noise in factories; process waste mud; process waste disposals and medical wastewater; process wastewater at mines; and process solid wastes disposed by thermal power plants); living waste treatment technologies (which help process living wastes and wastewater; recycle, reuse and collect living wastes; exploit and protect underground water; and handle the polluted environment caused by pesticides) and other technologies (which help observe and analyse environmental conditions; consult and transfer eco-friendly technologies; apply bio-technologies in environmental protection; and warn people of environmental pollution).

Energy-saving products/ technologies: Industry and construction (devices and technologies that help save energy and resources in industrial production chains; heat parameters that help control heat loss caused by production; cooler equipment; supervision technologies and devices – providing direct observation via a GSM system; measures that help reduce power loss in production; materials, outputs and ideas that can help businesses save resources and energy in the construction sector); renewable energies and new energies (devices that are powered by the sun, wind, biomass and clean energies…); transportation, petroleum and gas (exploitation, processing and production of petroleum; the parameter to control gas loss, gas power generator…); consultancy (consulting services, management software programmes, and research on energy-saving activities); living activities (solutions to help optimise the use of energies and resources such as lightning devices, air conditioners using the inverter technology, high-efficient power generators, water-saving devices…).

Eco-products: The products are made of clean and recycled materials; the products and services are eco-friendly; and their production chains are equipped with eco-friendly and energy-saving technologies.

Also, sideline activities will also be organised during Entech Vietnam 2018, such as the Việt Nam-South Korea Cooperation Conference; a dialogue between the Government and business community; business awards given in the exhibition and some specialised seminars held by companies.

Entech Vietnam 2018 is expected to draw the participation of 150 organisations and businesses - from both domestic and foreign markets - that have produced eco-friendly products and services to display 250 booths and attract 50,000 visitors. The event is meant to become a practical and important activity to raise the awareness of the local community about eco-friendly products/ services and connect foreign and local firms/organisations to invest, develop and transfer new technologies so that Việt Nam would achieve sustainable economic development■

Thorough application of "Polution Pays Principle"

"Polluter Pays Principle" is the rothough approach for the formulation of environmental policies in the decade of 2000s with the focus of environmental tax reform in order to mobilize the investments in environmental protection as shared by Dr. Jung Gun Young – Chief Representative of Korea Environmental Industry & Technology Institute (KEITI) in Vietnam in his interview by Environment Magazine of Vietnam Environment Adminsitration at 2018 Vietnam Korea Environmental Cooperation Forum co-hosted by Ministry of Natural Resources and Environment and Korea Ministry of Environment in Hanoi in April 2018.

▲ **Dr. Jung Gun Young** - *Chief Representative Korea Environmental Industry & Technology Institute – Vietnam Office*

✶***Could you please tell us about the objectives and purposes of the Vietnam Korea Environmental Cooperation Forum that just held this week, on 16th April 2018 in Hanoi?***

Dr. Jung Gun Young: As you knows, on 16th April 2018, in Hanoi Vietnam Ministry of Natural Resources (MoNRE) and Korea Ministry of Environment (KMoE) have renewed the Memorandum of Understanding which was first signed in 2008 to enhance bilateral cooperation in the fields of environment protection between the two countries. Since 2008, the Ministerial Meetings between the two ministers have also annually held in order to review the outcomes of cooperation activities implemented under the framework the the MoU mentioned above and to discuss on future cooperation activities. Vietnam Korea Environmental Cooperation Forums have started to organize since 2012 as a side event during the annually official Ministerial Meetings between the Minister of MoNRE and the Minister of KMoE to aim at network building and business matching between the Korean and Vietnamese enterprises. Besides, the two ministries also presented the new environmental policies and investment opportunities in order to promote the investment in the fields of environment infrastructure, environmental technology and industry in Vietnam. The forum held on 16th April 2018 is the third forum happening in Vietnam after the 1st forum held in 2012 and the 2nd one held in 2014.

✶***Could you please tell something about the policies on the promotion of investment spent for environment protection in Republic of Korea in last years? What Vietnam can learn from those policies?***

Dr. Jung Gun Young: Republic of Korea Government has based on "Polluter Pays Principle" to mobilize investment for environmental protection. Therefore, in the 2000 decade, Korean Government had put its focus on the reform of environmental tax, charges and fees. In 2014, environmentally related tax revenues were at 2.25% of GDP, ranking at 14th highest environmentally related tax revenue among 34 OECD and 5 partner economines. In Korea, the revenue of environmental tax, charges and fees can cover for the government environmental expenditure (including also expenditure on water supply and nature protection) which is over 2% of GDP recently. Besides, Korea Government has also applied many other policies in order to increase the efficiency and the profit of the investment on environmental protection fields such as the implementation of waste separation at source and voume based waste fee for increasing recycling; promotion of ecolabelling systems, green procurement and green living style, etc… for promoting the clean production, energy saving and environmental protection among various society communities and groups. Finally, we understand that renovation of technologies both on production and environmental protection is very important for greening the country. That is why since 2011, Environmental Technology and Industry Support Act had been enacted in Korea. Korea Environmental Industry & Technology Institute (KEITI) is a government organization affiliated with the Korea Ministry of Environment (KMoE) and committed to achieving both environmental protection and economic growth through the provision of supports for industries to create environmental technologies, to nurture environmental industries and to promote an eco-friendly lifestyle. It can say that KEITI plays a key role in the promotion of environmentally friendly technologies, production and living style in Republic of Korea. As Vietnam government is now facing with many difficulties, including high pub-

▲ *Meeting with Vice Chairman Dương Tất Thắng of Hà Tĩnh Province People's Committee (PPC) on 25th January 2018 for preparation of the project on "Master Plan For Improving Sewerage System and River Water Quality of Hà Tĩnh Province, Vietnam" supported by KMoE to Hà Tĩnh PPC (2018-2019)*

lic debt, the budget deficit, the mobilization of investment for environmental protection is not easy tasks. Therefore, at the moment, Vietnam should focus on the reform of environmental policies and taxation systems that help to apply the "Polluter Pays Principle" in the mobilization of environmental investment and to mazimize the efficiency and the benefit of environmental investments at the same time.

✶***We have learnt that there are many associations, enterprises operating in the environmental fields and works both Korean and Vietnamese participated in the Vietnam Korea Environmental Cooperation Forum held on 16th April 2018. So what will be the opportunities for business cooperation between the Korean and Vietnamese companies in environmental fields according to your point of view?***

Dr. Jung Gun Young: As mentioned above, being one among key government organizations to build more sustainable society, it is our core task to support small and mid-sized enterprises which possess outstanding technologies but lack the resources to commercialize them. KEITI provides these companies with the support they need during the start-up and growth stages to help them more effectively advance into the global market. Therefore, the environmental cooperation forums was provided to facilitate the cooperations and business exchange among Korean and Vietnamese enterprises. The 2018 Environmental Cooperation Forum held in Hanoi attracted the participation of about 15 Korean companies and 40 Vietnamese companies. The forum gave a good chance for Korean companies to present to Vietnamese partners with their advanced environmental technologies those are suitable for Vietnam development context and market such as the automatic water monitoring solutions by BLProcess, the water supply and treatment technologies by GETEC, Rothwell Water. Vietnamese companies also found a good chance to explore the opportunities for investment mobilization, technology transfer from Korean companies. Besides, the presentations of the companies, both Vietnamese and Korean government organizations under KMoE and MoNRE also presented the government policies on the government priorities on environmental protection and investment promotion. The presentations from government organizations in the forum provided very good guidances for both Korean and Vietnamese companies in the operation of their efforts and activities in Vietnam market. I believe that based on the information and business talks shared during the forum, the Vietnamese and Korean companies participated in the event will exchange furthermore discussions in future in oder to explore more chances for effectively work and cooperate together.

✶***Vietnam has been evaluated as a promising market for environmental technologies and industries, especially in the fields such as pollution prevention and control, environmentally friendly technologies and products, consultancy and technology transferring, etc… so what do Korean enterprises prepare for penetrating into Vietnam market?***

Dr. Jung Gun Young: Vietnam and Korea has many similarities in many aspects such as culture, the radpid economic development without environmental consideration at the beginning of industrialization process, etc… Korea had experienced the same situation of environmental degradation due to rapid industrialization during 1960s-1980s which is similar the situation Vietnam is now facing with at the moment. With that experiences, Korean enterprises also see the promising market for environmental technologies and industries in Vietnam. Therefore, since 2005, more and more Korean environmental technology and consulting companies have spent their resources and efforts to explore business opportunities in Vietnam. That is why KMoE established the Vietnam Korea Environmental Cooperation Center (VKE-

CC) in Vietnam and delegated KEITI to operate this center in order to promote the trading of environmental technology and industry between the two countries. We, KEITI through the operation of VKECC, provide supports to both Vietnamese partners and Korean companies for partnership making, business matching and capacity building in order to promote for investment, technology transfer and industry nurturing in the fields of environment in Vietnam.

✶After the Vietnam Eco Technology Exhibition in 2017, International Environmental and Energy Technology Exhibition 2018 will be held soon in Hochiminh city. So what kind of supports do you, KEITI have offered to the enterprises and companies participating in the coming exhibition?

Dr. Jung Gun Young: For the ENTECH 2018 that will be held in Hochinminh city on 9th – 11th May 2018, KEITI had supported the Vietnam Environment Adminsitration (VEA) in promoting the participation of Korean companies in the exhibition. KEITI also works very closely with the Centre for Environmental Technology Transfer (CECT) under VEA in order to connect the Korean companies and Vietnamese companies for business matching and networking. At the moment, we have planned to facilitate for about 30 meetings between Korean technology providers and Vietnamese potential buyers during the ENTECH 2018 in Hochiminh city. We do hope that these meetings will be successfully and fruitfully organized to promote technology transfer and environmental trade between the two countries in future.

✶Thank you very much for your time and interesting interview.

Phạm Tuyên *(Implemented)*

10 firms win national environment award 2017

▲ *10 companies have won the National Energy Efficiency in Industry Award 2017*

10 domestic companies with the highest energy efficiency have won in different categories of the National Energy Efficiency in Industry Award 2017.

The winners were selected from dozens of applications in food processing, industrial support services, medical equipment, mechanical equipment, garment, water supply, paper production, oil refinery, rubber and other sectors.

The first prize was jointly awarded to Colusa-Miliket Foodstuff Joint-Stock Company (Colusa Miliket) and Polytechnical Mechanical, Thermal, Electrical and Refrigeration Engineering Company Limited (Polyco) in the category of best energy efficiency solutions in production.

Both companies won with their outstanding achievements and strong commitment to energy saving and energy efficiency.

The award, organized by the Vietnam Energy Conservation and Energy Efficiency Association (VECEA) under the Ministry of Industry and Trade (MOIT) and supported by MOIT's Renewable Energy and Energy Efficiency (4E) Project, is aimed at promoting environmental protection in industry ensuring sustainable development.

The 4E project is currently implemented by MOIT'S Department of Energy Efficiency and Sustainable Development and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal.

Đỗ Hữu Hảo, chairman of VECEA and head of the organizing board, said the board had received many applications from various industrial sectors, which itself was a proof that the companies were really committed to energy saving. It is encouraging to see their hard work and the fact that through the years, they have carried out many energy-efficiency measures to reduce the energy cost, enhance their competitiveness and reduce pollution.

Ingmar Stelter, director of GIZ/MOIT Energy Support Programme said with the energy-saving potential in Việt Nam reaching 30%, energy-efficiency measures brought a great opportunity to help save resources for other costly power infrastructure projects without jeopardizing economic growth. The award is an opportunity to show that very little investment in energy saving can bring a lot of benefits and values. Today's award winners are really pioneers and role models on energy efficiency in Việt Nam.

As one of the most dynamically growing economies in Asia, Việt Nam faces an enormous increase in energy demand that will continue to grow at double-digit rates in the coming years.

The industrial sector is the biggest electricity consumer, accounting for 47% of the national consumption, according to Việt Nam Energy Statistics in 2015.

The Vietnam's government has also set a national target of saving up to 10% of the total electricity consumption during 2016 - 2020 in the revised Power Development Plan VII, which was published in 2016■

Thanh Huyền *(VNS source)*

Bình Định: Over 1 million USD in biodiversity preservation invested

▲ *A wastewater treatment plant was put into operation in Mộc Bài TMTC industrial park*

The central province of Bình Định plans to spend 24.5 billion VND (1.09 million USD) on a project to preserve biodiversity by 2025.

Bình Định now has 7 provincial-level nature reserves and habitat preservation areas in the districts of An Lão, Phú Mỹ, Phù Cát, Vĩnh Thành, Quy Nhơn city and Bà Hỏa mountain area.

The project aims to sustainably protect and develop important natural ecosystems, rare and endangered species and genre sources; maintain and develop climate change adaptation ecosystem services, and raise public awareness of protecting biodiversity conservation.

A biodiversity corridor connecting the An Toàn nature reserve in An Lão with Kon Chư Răng preservation area of the Central Highland province of Gia Lai as well as a series of flora garden systems, a wild animal rescue centre, and a center for conserving plants and animals will be planned.

Attention will be paid to protecting and developing rare and endangered species, natural forest ecosystems, and natural resources in coastal and inland water areas, and sand-banks in unused land areas.

The An Toàn nature reserve, the largest of its kind in the province, is home to a diversified ecosystem and many endemic flora and fauna species. The local authorities plan to expand the reserve to 26,050 ha by 2030■

Quỳnh Như *(VNA source)*

Tây Ninh: Wastewater treatment plant in Mộc Bài Industrial Park put into operation

On March 22, a wastewater treatment plant was put into operation in Mộc Bài TMTC industrial park (IP) in Bến Cầu district, the Southern province of Tây Ninh.

Invested by Taekwang Group of the Republic of Korea (RoK), the 15-million-USD plant covers an area of 4 hectares. It is able to treat 20,000 cu.m of wastewater per day. The treated wastewater will be discharged into biological lakes and a nearby canal for further treatment before reusing.

The Mộc Bài TMTC industrial park has a total area of 108 ha, 71 ha of which is earmarked for industrial production. It has so far attracted 7 investors from the RoK and China with total registered investment of over 50 million USD.

4 factories are under construction at the industrial park while another was already put into operation■

Phạm Văn Ngọc *(VNA source)*

Hà Nội: All industrial parks to have wastewater systems by 2020

The capital city of Hà Nội will focus on wastewater treatment systems in all industrial parks by 2020 as part of its efforts to enhance environmental protection.

The municipal People's Committee has ordered the Department of Natural Resources and Environment to examine the environmental impact assessments of operating projects in the city.

Meanwhile, investors must work to handle wastewater that can pollute and damage the surrounding environment and local livelihoods. All of the measures must be made in compliance with national technical standards. In addition, they must declare and pay fees for environmental protection.

The capital city is now home to 18 industrial parks with a total area of nearly 3,441 hectares. There are 89 industrial complexes in the city, 43 of which are operating stably and 46 others have just completed their infrastructure systems.

According to reports from relevant authorities, wastewater treatment plants have been built in nine operating industrial zones while construction of 21 stations in 43 industrial complexes has been completed. However, of the 21 only 10 stations with combined capacity of 10,800 cu.m/day are operational.

Huy Hoàng *(VNA source)*

Financial assistance necessary for cleaner production methods

Clean production is the future of the global production industry, benefiting not only the environment but also corporate performances.

However, there are some misunderstandings among enterprises about clean production, such as clean production increasing their costs and reducing their competitiveness.

On the occasion of the Lunar New Year 2018, the Vietnam Environment Administration Magazine talks to Trần Văn Nhân, Director of the Vietnam Cleaner Production Centre (VNCPC) - The unit that consults and develops key specialists on clean production about further development of clean production strategy in future.

▲ **Dr. Trần Văn Nhân**
Director of the Vietnam Cleaner Production Centre

✶***VEM: How has VNCPC been working recently?***

Mr. Trần Văn Nhân: As a member of the science-technology business units (BK Holdings) of the Hanoi Science and Technology University, VNCPC has been working to encourage Vietnamese businesses to apply the "Resource Efficiency and Clean Production" (RECP) principles in their business activities. Its efforts aimed at helping Việt Nam realize the goal of "Responsible production and consumption", the 12th of the 17 Sustainable Development Goals set by the United Nations' Agenda 2030. VNCPC has worked with both domestic and international partners in the selection of potential projects developed by international sponsors. In the past few years, we have completed the following projects:

- The Sustainable Product Innovation project in Việt Nam, Laos and Cambodia, which was co-developed by the Delft University of Technology, United Nations Environment Programme, VNCPC, Asian Institute of Technology in Vietnam (AITVN) and London Chamber of Commerce and Industry and sponsored by the European Union. The project was implemented between April 2010 - April 2014.

- "Sustainable living and working in Việt Nam (Get-Green Việt Nam)", which was co-developed by the Delft University of Technology, VNCPC and AITVN, sponsored by the European Union and implemented between April 2013 - April 2017.

- Project on reducing industrial wastes to develop Việt Nam's low carbon-emission production industry, which focused on rice and coffee industries. The project was co-developed by VNCPC and the Swiss sustainability consulting and project management firm Sofies, sponsored by Switzerland's State Secretariat for Economic Affairs (SECO) via the United Nations Industry Development Organization (UNIDO), and implemented between 2013 - 2016.

- The component on "Competency development and assessment of RECP" for enterprises that participate in the project on "Eco-Industrial Park Initiative for Sustainable Industrial Zone in Việt Nam", which is sponsored by SECO and the Global Environment Fund via UNIDO and implemented between 2016 - 2018.

▲ *A training course on efficient use of resources and cleaner production in Ninh Bình province*

✶***VEM: As a partner in the project "Eco-Industrial Park Initiative for Sustainable Industrial Zone in Việt Nam", what activities has VNCPC carried out?***

Mr. Trần Văn Nhân: Increasing resource efficiency and clean production is the fundamental solution to develop an eco-industrial park. The project has been successful due to the active participation of enterprises located in industrial parks (IPs). Therefore, the first thing is to select the right businesses that have paid more attention to efficient use of resources and cleaner production among enterprises operating in selected IPs. The project deployed in 3 IPs - Khanh Phu IP in Ninh Bình Province, Hoa Khanh IP in Đà Nẵng and Tra Noc IP in Cần Thơ City. Enterprises participate in

the project voluntarily based on the following criteria: Business compliance, potential in improving efficient use of resources and clean production,business environmental impact reports, infrastructure and financial strength.

The first RECP activity is to train technical and managerial staff in enterprises and IPs in selected local areas. Business employees who join the training are also key employees of the selected enterprises. After finishing the training course, trainees have to conduct RECP Assessment on their enterprises with technical assistance and consultancy provided by VNCPC specialists. They are expected to continue with the RECP Assessment during their time at the enterprise.

Business RECP Assessment is conducted in four stages, with one being implemented at least a month after the other. VNCPC specialists have to work with the selected enterprises for two days in each stage to instruct RECP Assessment teams to carry out their evaluations systematically based on the practical conditions of the enterprises. The assessment teams must address the issues and categorize them to analyze the reasons and causes and propose solutions for clean production. They also have to classify potential solutions and researches, implement clean production solutions, monitor and evaluate the assessment results as well as expand the project to keep it going.

Until now, the project has successfully trained 214 key employees of 89 enterprises and 3 IP management units and provided onsite training to 240 employees of the selected enterprises. It also provided instructions and technical assistance to 46 enterprises to complete their RECP assessments. The implementation of clean production solutions has helped selected enterprises enhance resource use efficiency, reduce negative impacts on the environment and economy and improve the working conditions and professional safety of workers and employees. In the long term, these results will help the selected enterprises raise their competitiveness in the market.

RECP Assessment shows that 46 enterprises in the three selected IPs have invested a total of VND152 billion in clean production. They have saved VND 48 billion by implementing clean production solutions, such as reducing the consumption of energy, water, production material and chemical substances. These enterprises have saved nearly 10 million kWh of power, more than 5,000 tonnes of coal, 17 tonnes of gas, 74 tonnes of wood and rice hulls, more than 184,500cu.m of water, nearly 2,670 tonnes of material and 10.6 tonnes of chemical substances. They have also been able to reduce their production wastes, such as waste water (184,540cu.m), carbon dioxide (14,162 tonnes) and solid waste (2,669 tonnes).

▲ *Eco-friendly technologies are applied by many enterprises in their production chains*

Besides these benefits, RECP Assessment shows that enterprises in the selected IPs have shown signs of recycling and reusing waste, which is disposed by one enterprise and supplied to another.

✶VEM: The main obstacle to clean production is that Vietnamese enterprises are not aware of the benefits of clean production solutions for their businesses. What policies and incentives should the government provide to encourage domestic firms to care more about clean production solutions?

Mr. Trần Văn Nhân: To make local enterprises more interested in clean production, the government needs to popularize the clean production results achieved by some particular enterprises previously besides developing a nationwide legal framework. In addition to low-cost and costless clean production solutions that can be implemented immediately, the government needs to develop financial funds and mechanisms to help enterprises invest in clean production solutions. The Green Credit Trust Fund, which is consulted and coordinated by VNCPC, has shown that lack of financial assistance is one of the main challenges for small - and medium-sized enterprises to renovate their production technologies towards a more environment-friendly model, which is considered a long-term impact clean production solution. The government also needs to apply economic tools, such as taxes and charges in industrial environment management, to encourage local firms to make stronger and more rapid changes.

✶VEM: What do you recommend to government agencies regarding this issue?

Mr. Trần Văn Nhân: In my opinion, to promote the use of clean production solutions, the Ministry of Industry and Trade needs to monitor and hasten local enterprises to carry out the Strategy on Cleaner Production Applications in Industries by 2020 and the industry and trade sector's Action Plan on the National Green Growth Strategy. The government should ask local firms to include these strategies in their annual corporate performance reports. The Ministry of Natural Resources and Environment must force local firms to comply with environmental protection regulations, which can push the companies to apply clean production solutions and improve their production methods to become more environment friendly.

✶VEM: Thank you!

Phạm Đình *(Implemented)*

How China's ban of plastic waste imports can help us beat pollution?

When China decided to ban imports of plastic waste at the end of last year, it left major exporters of plastic waste unprepared. According to the Worldwatch Institute, the average North American or European consumes 100 kilograms of plastic every year. Globally, only 14% of our plastic waste is being recycled. Current recycling machines are unable to separate plastics into reusable forms, so plastic waste has previously been pressed into bales and sent to China, where recyclable plastic was manually picked and reused.

The imports of plastic waste have had disastrous impacts on the environment and people's health in China. Batches were often contaminated with hazardous materials, such as medical trash, endangering workers in the recycling facilities.

Approximately 8 million tons of waste, the amount China imported in 2016, now needs to be processed somewhere else. This could mean shifting the waste to neighbouring countries, but less developed treatment industries give rise to a growing informal recycling sector and its related environmental and social damages. For now, the United Kingdom and the United States have turned to landfilling and incineration to rid themselves of their growing piles of plastic waste, meaning that resources are not only being wasted, but are also polluting air and land.

China's policy decision should not mean that the "problem" of plastic waste is relocated to other countries or buried on landfill sites. Instead, this moment should be seen as a trigger-point to develop sustainable plastic waste management practices and boost recycling rates in waste exporting countries.

Green industrial policies allow governments to leverage this opportunity to cut off plastic waste where it starts. Plastic waste regulations show how green industrial policy can directly impact our daily lives. But it is only one piece in a set of different policies that can help transform our economies into drivers of sustainability. While research into the field of green industrial policy is still relatively limited, UN Environment and the Partnership for Action on Green Economy (PAGE) are at the forefront of delivering the data, the theoretical information and concrete advice to policymakers, enabling them to pilot this transformation in their countries■

An Bình

(UN Environment source)

485,000 kWh of electricity saved during Earth Hour 2018

▲ *Overview of the launching ceremony of the campaign*

Việt Nam saved 485,000 kWh of electricity, equivalent to 834 million VND (36,612 USD), during the Earth Hour from 8:30pm - 9:30pm of March 24. This year's figure represented a slight rise against the 471,000 kWh of electricity saved during the Earth Hour 2017.

During the hour, many people from 63 provinces and cities nationwide switched off unnecessary electrical devices.

Speaking at a ceremony held by the Ministry of Industry and Trade in response to the Earth Hour in Hanoi's August Revolution Square on March 24, Deputy Minister Cao Quốc Hưng said that the Vietnam's government has issued a lot of strategies and policies on thrift energy use and environmental protection in order to show the country's determination to reduce greenhouse gas emissions.

Earth Hour is the largest social event in the world, which has been observed in 7,000 cities of 172 countries and territories. Việt Nam first joined the Earth Hour campaign, which is an initiative of WWF, in 2009 as part of efforts to realize its commitments to reducing 8% of greenhouse emission by 2030 in response to climate change.

Together with the symbolic action of turning off unnecessary electrical devices for an hour on March 24, many other power-saving activities have been launched at businesses, households, schools, together with competitions and Flash mob performances during March, the month of the campaign■

Nguyệt Minh *(VNA source)*

Road traffic remains biggest source of noise pollution in Europe

With an estimated 100 million Europeans affected by harmful levels, road traffic is by far the largest source of noise pollution in Europe, according to a new assessment published by the European Environment Agency (EEA) recently.

The EEA briefing "Managing exposure to noise in Europe" provides updated estimates of the numbers of people exposed to noise in Europe. It also provides an update on the measures being taken by EU Member States in addressing noise issues.

Noise pollution remains a major environmental health problem in Europe, with the transport sector being a major cause. Road traffic noise is the dominant source affecting human exposure above the EU's threshold of 55 decibels (dB) for daily exposure and 50 dB for night exposure. Around 100 million people are exposed to road traffic noise above 55 dB in the 33 member countries of the EEA. Of these, 32 million are exposed to very high noise levels (above 65 dB). Railways is the second largest source, with 19 million people exposed above 55 dB. Aircraft noise, close to major airports, is the third main source, with more than 4.1 million people exposed, followed by industrial noise within urban areas, with 1.0 million people exposed.

Noise from road traffic alone is the second most harmful environmental stressor in Europe, behind air pollution, according to the World Health Organization (WHO). The harmful effects of noise arise mainly from the stress reaction it causes in the human body, which can also occur during sleep. These can potentially lead to premature death, cardiovascular disease, cognitive impairment, sleep disturbance, hypertension and, at the least, annoyance.

Tackling noise pollution in the EU

The European Union has taken action to address the problem through the 2002 Environmental Noise Directive (END). The EU legislation requires Member States to prepare noise maps that inform the development of action plans designed to prevent and reduce harmful exposure. The briefing also presents an updated summary of the different types of measures used by countries to reduce noise. These range from actions that control noise at source, such as introducing low noise road surfaces, quieter aircraft and railway stock, through to measures such as improving urban design to reduce traffic volumes and restricting housing developments in high noise areas.

The briefing is a follow-up to the EEA's Noise in Europe 2014 report and its release coincides with the Noise in Europe conference held in Brussels on 24 April and International Noise Awareness Day on 26 April. The briefing is based on the latest data reported to the EEA by its member countries in accordance with the EU's Environmental Noise Directive (END). Accompanying the briefing are updated country factsheets and a new web-viewer which shows updated data on noise pollution across Europe■

Mai Hương *(EEA source)*

Project to develop Mekong Delta's tourism adapted to climate change

▲ *Prime Minister Nguyễn Xuân Phúc (back, fourth, right) witnessed the signing of the cooperation agreement in Cần Thơ on March 27*

The People's Committee of Cần Thơ city, the Novaland Group, the Boston Consulting Group (BCG), and the Military Commercial Joint Stock Bank (MB-Bank) have teamed up to implement a project on developing the Mekong Delta's tourism adapted to climate change.

They signed the cooperation agreement in Cần Thơ on March 27 in the presence of Prime Minister Nguyễn Xuân Phúc.

The project aims to build and carry out a strategy for tourism connectivity and development of the 13 Mekong Delta localities with Cần Thơ city playing the key role.

The parties in this project hope to build suitable models to international standards to tap into the Mekong Delta's tourism potential while preserving local cultural identities. They also look to improve tourism services and public awareness of environmental protection and help small-and medium-sized enterprises create more jobs for local people.

The Mekong Delta is the biggest rice, fruit and aquatic production hub of Việt Nam. However, it is also one of the Vietnamese regions most vulnerable to climate change.

BCG Managing Director in Việt Nam Christopher Lewis Malone said when it is optimized, the Mekong Delta could be a gem of Vietnam's tourism that is comparable to some of the world's famous river tourism destinations like the Nile Delta in Egypt.

A preliminary estimate of the BCG shows that an additional 300,000 jobs could be generated in the tourism sector by 2025, giving the important diversity to the economy and livelihoods of residents in the Mekong Delta.

The cooperation among the Cần Thơ People's Committee, Novaland, BCG and MB Bank is expected to connect and attract international organizations like the World Bank, the International Finance Corporation, and the Asian Development Bank to fund climate change adaptation in the Mekong Delta.

Appreciating the parties in the project, Prime Minister Phúc said it is a must to turn risks into opportunities and challenges into actions in the Mekong Delta. He said he encourages ideas of developing eco-tourism and community-based tourism and bringing into play the Mekong Delta's identities.

He voiced his belief that with the BCG's prestige and network, the firm will help the Mekong Delta become a magnet for domestic and foreign investors.

He also asked Cần Thơ and relevant sectors to provide favourable conditions for the project to be implemented soon so as to turn the Mekong Delta into a leading tourism destination of the world■

Nam Việt *(VNA source)*

Medal for the cause of Natural Resources and Environment for Chief Representative of JICA Office in Việt Nam

On March 13, in Hà Nội, Minister of Natural Resources and Environment Trần Hồng Hà hold a reception to work and present the medal for the cause of natural resources and environment to Yasuo Fujita, Chief Representative of JICA Office in Việt Nam.

As JICA Chief Representative, Yasuo Fujita has significant contributions in bringing JICA's cooperation with Việt Nam in general and the Ministry of Natural Resources and Environment in particular to become more diversified and effective.

Yasuo Fujita is about to end his term in Việt Nam, Minister Trần Hồng Hà wished him and his family good health and success on the new assignment. Minister hoped regardless of his new position, Yasuo Fujita

will spend his warm sentiment to Việt Nam and the Ministry of Natural Resources and Environment.

Minister Trần Hồng Hà also presented the medal "For the cause of Natural Resources and Environment" to Yasuo Fujita for his contributions to the field of environmental protection and response to climate change in Việt Nam.

Responding to the sentiments of MONRE for him, Yasuo Fujita said he would always bring in his good feelings. Yasuo Fujita also presented to his Minister his successor and wished that MONRE would always cooperate actively and look forward to receiving the close cooperation of Tetsuo Konaka - JICA new Representative in Việt Nam.

According to Yasuo Fujita, before his arrival in Việt Nam, JICA's new Representative in Việt Nam - Tetsuo Konaka is Head of the Partnership and Finance Department for Private Sector of JICA. He also served as Chief Representative of JICA Office in China from October 2013 - October 2015. With its experience, JICA is confident of the new term of JICA new Representative in Việt Nam - Tetsuo Konaka.

Welcoming Tetsuo Konaka, Minister Trần Hồng Hà believed that JICA new Chief Representative would absorb JICA's great achievements in Việt Nam in recent years. The Minister expected JICA new Chief Representative to continue to promote and develop new directions for cooperation with Việt Nam in general as well as with MONRE in particular. The Minister wished the new Representative of JICA a successful term of cooperation with MONRE.

Expressing his gratitude to Minister Trần Hồng Hà for receiving and working with his predecessor, Tetsuo Konaka promised to further promote the cooperation between the 2 sides. JICA would continue its activities with MONRE in environmental protection and response to climate change under the 2 governments' agreement. At the meeting on March 13, Minister Trần Hồng Hà and leaders of JICA in Vietnam also discussed about the cooperation programs of the two sides in the coming time such as implementing ODA projects funded by the Government of Japan to support Việt Nam including natural resources and environment; Implementation Plan for the Paris Climate Change Agreement; environmental pollution in Hà Nội and some big cities; support programs in response to climate change...■

Vũ Hồng *(VEA source)*

ASEAN Biodiversity Heroes Regional Forum in Việt Nam

From March 26 - 27, Ministry of Natural Resources and Environment (MONRE) coordinated with the ASEAN Center for Biodiversity (ACB) and Hanoi University of Natural Resources and Environment under MONRE to host the ASEAN Biodiversity Heroes Regional Forum.

▲ *Giving souvenirs for 4 biodiversity heroes*

In order to sustain the achievements, this forum included a series of 3 regional Biodiversity Heroes forums to attract key individuals and organizations from different sectors - media, universities, academic research institutions, government agencies, private organizations, and young people who join hands to protect biodiversity.

The ASEAN Biodiversity Heroes Regional Forum makes an important contribution to raise awareness among young people not only in Việt Nam but also ASEAN countries on the important role of biodiversity. The stories and messages that Heroes brings to this forum will be inspirations to spread the spirit and responsibility of human to nature.

At the forum, Biodiversity heroes from Laos, Myanmar, Thailand and Việt Nam shared stories about their way to biodiversity, as well as conservation initiatives and experiences. They not only contribute to the achievement of the country's sustainable development goals, but will have initiatives to preserve the ASEAN's biodiversity and thus contributing to sustainable development in the region.

The representative of Việt Nam is Prof. Dr. Đặng Huy Huỳnh, former Director of the Institute of Ecology and Biological Resources, Chairman of the Vietnam Zoology Association, Vice President of the Vietnam Association for Conservation of Nature and Environment. He is one of ten outstanding individuals from 10 ASEAN countries who honored to receive this noble title. He has studied the status of biodiversity resources of various ecosystems of biodiversity as well as the protection measures not only for Việt Nam but also for Indochina and ASEAN countries. In addition, he also organizes the establishment of heritage trees and provides trainings for staffs and youth scientists to participate in biodiversity conservation.

At this forum, the Director of ACB Roberto V. Oliva called: "I also challenge you, are you dare to be part of a new generation who equipped with knowledge to play the role of a messenger of changes for the purpose of biodiversity conservation"■

Bình Minh *(Monre source)*

Accelerating Green Growth and strengthening cooperation in Việt Nam

Over the years, the Global Green Growth Institute (GGGI) in collaboration with the Ministry of Planning and Investment (MPI) has supported Việt Nam in Vietnam Green Growth Strategy implementation, capacity building and green growth initiatives promotion.

On the occasion of the official visit to Việt Nam of GGGI's Director General, Dr. Frank Rijsberman, Vietnam Environment Administration Magazine (VEM) had a chance to interview with him, regarding to comprehensive strategic partnership and the cooperation framework to promote Green Growth between GGGI and Việt Nam.

▲ **Dr. Frank Rijsberman**
GGGI's Director General

✶***VEM: Could you tell us about the role and the contribution of GGGI in the region and to Việt Nam?***

Dr. Frank Rijsberman: GGGI is an intergovernmental organization founded in 2012 and headquartered in Seoul, with Việt Nam as one of our founding member countries. GGGI was established to work with our member states on the planning and implementation of green growth, so working across from policy formulation right through to the development of bankable projects to access financing.

In Việt Nam, we have programs of work that span green finance with the Ministry of Planning and Investment (MPI), developing a set of guidance to increase green public sector finance, including working with the SME Development Fund to increase green finance to SME's. GGGI works with the Ministry of Construction (MOC) on urban green growth, at both the policy level; for example partnering to develop a set of urban green growth indicators - enshrined into policy via a circular (No. 01/2018/TT-BXD) - the first legal document on urban green growth, and on feasibility studies for green projects. GGGI works with the Ministry of Industry and Trade (MOIT) on renewable energy, currently in bioenergy with sugar companies and on the provincial planning for Sóc Trăng province.

✶***VEM: What do you think about the implementation of the policy to promote green growth of Việt Nam so far?***

Dr. Frank Rijsberman: Việt Nam launched the Green Growth Strategy in 2012 and subsequent Action Plan in 2014, outlining clear objectives to deliver green growth across Vietnam's whole economy. GGGI has worked with MPI during the formulation of the green growth strategy in sharing experience from the Korean green growth model during the very early days of GGGI. Much progress has been made to date in the laying the foundations for delivering on the green growth objectives. Many provinces have developed a number of green growth action plans with some building wastewater treatment plants and installing renewable energy. For the next phase, Việt Nam needs to accelerate this implementation and begin to tackle some more pressing issues such as increasing the share of renewable energy while decreasing the use of coal power, reducing air pollution and implementing a sustainable solid waste management plan in cities. GGGI will continue to work with the government in these areas and many more to ensure that green growth becomes reality in Việt Nam.

✶***VEM: What are the biggest advantages and barriers to promoting Vietnam's green growth?***

Dr. Frank Rijsberman: One of the biggest advantages for Việt Nam is the abundance of renewable energy potential that the country has - in solar, wind, biomass and hydro, and that costs are now competitive with coal power. Việt Nam has made great strides in tapping its hydro potential, but less so in the other areas. Currently, wind power in Việt Nam only accounts for 159 MW, despite there being potential of 10 - 12 GW by 2035 , for solar there is barely any in the country at present but with a potential of 21 - 40 GW by 2035 . The government recently introduced a competitive feed in tariff for solar which has resulted in a surge of interest from private investors which is a welcome development. We hope the government will raise the feed in tariff for wind and biomass energy too, to really use the huge potential in renewable energy, Việt Nam has to meet its growing energy demand. A recent report from GGGI called "Pushing the envelope on renewable energy", which looked at 6 countries across Asia (China, India, Philippines, Indonesia, Thailand and Việt Nam), showed that though feed-in-tariffs need to be set high initially, to open up

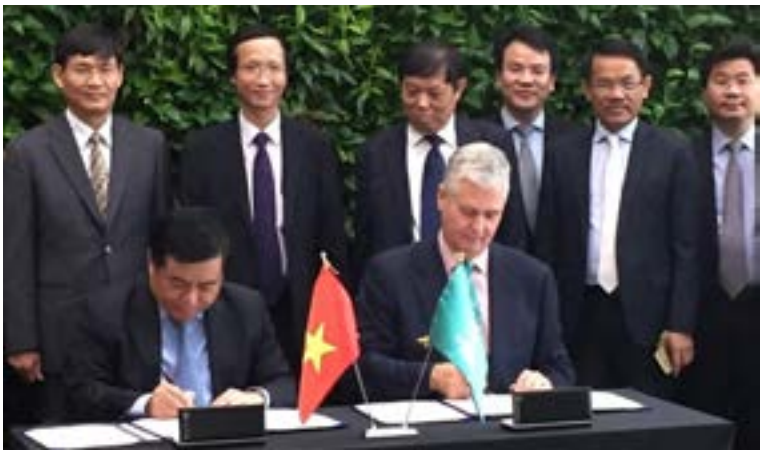
the market, these can quickly come down. Once investors can see there is a solid regulatory environment for them to recoup their investment, more will follow even at lower feed in tariffs. New markets are always risky but once established this risk decreases, and can decrease very quickly. For example, in India the feed-in-tariff for solar was around 16 c/kwh in 2010 but we have already seen record low prices at solar auctions of around 4c/kwh today.

However, one of the most important barriers for promoting Vietnam's green growth is the development of good projects that are able to attract green and climate finance. There is plenty of green investment funding looking for good projects, but Việt Nam needs to develop projects that are "bankable", especially utilizing private sector financing. This is a key area for GGGI's future work in Việt Nam.

✶VEM: Could you share the world's experience on green growth and lessons learned for Việt Nam?

Dr. Frank Rijsberman: Việt Nam could learn from the experience of the Republic of Korea in mainstreaming green growth into the urban planning processes, for example. Korea's local government has made efforts not only to create new cities to accommodate its growing urban population but also to renovate existing cities and improve their systems to reduce GHG emissions. Some of the actions that have been successfully implemented in Korean cities include: Spatial planning targeted on reducing GHG emissions; bridging the trends observed in commuting patterns with the city's transportation planning to help reduce energy intensity; and expanding the application of green infrastructure. Việt Nam could also learn from the smart public transportation systems in Korea. Together with the Integrated Fare System and the Integrated Transit Card System, Seoul's public transport provides smooth connections and uninterrupted traveling experience, creating a strong incentive for people to travel clean and green.

Another experience is from different policies to promote renewable energy. Canberra, for example, the capital of Australia, has put in place enough renewable energy projects to become 100% renewable energy by 2020, through a combination of rooftop solar on public buildings, schools and residences, as well as large scale solar and wind farms. The UK has reduced its reliance on coal power from over 40% to less than 10% in 10 years' time, primarily through cheap wind energy. In Germany, decentralized solar implemented by farmers, households and cities has grown so rapidly that during some days in 2017 the total energy demand for the country was met by renewables. In India, super low prices for solar energy in large auctions have led the government to abandon their plans to construct new coal fired power plants.



▲ *Signing ceremony of cooperation between MPI and GGGI*

✶VEM: In order to implement green growth, together with the environmental sustainability, what conditions do Việt Nam need in the context of the 4.0 industrial revolution?

Dr. Frank Rijsberman: Indeed, we are actually in the middle of an energy and transportation disruption. A disruption is a very rapid change in which one technology displaces another one over a very short period of time, like the car replaced the horse. Renewable energy has already become the cheapest form of energy, rapidly displacing fossil fuels. Falling battery prices will soon make local energy storage economical and will displace the centralized electricity grid by decentralized systems with local storage in mini-grids and buildings. Electric vehicles, powered by clean energy, will likely displace the combustion engine in 10 years. Shared autonomous vehicles, say self-driven Uber taxis, are already on the road and can cut the cost of transportation, reduce the number of vehicles by 3X, and end traffic jams and parking problems. That will enable a re-organization of our cities towards green, smart cities where parks and urban agriculture replace highways.

Việt Nam should focus on setting the right policies to unlock the potential of private investment, such as feed-in-tariffs and strong power purchase agreements. As well as prioritizing green infrastructure such as mass rapid transit for cities - this doesn't have to be expensive metros but can be cheaper bus rapid transits with dedicated lanes, which are enforced, to ensure the buses move much quicker than private vehicles.

Coastal economic zones of Việt Nam: Strengthening of technological innovation and reduction of greenhouse gas emissions Vietnam's government and investors have to ensure to be in the forefront of this green growth energy and mobility revolution. That is also very much the mission and business of the Global Green Growth Institute: Supporting and partnering with our members to accelerate their transformation to a green growth economic development pathway. We see tremendous opportunities for Việt Nam and are ready to share the experience of other GGGI member countries. We see a future in which Việt Nam maintains its strong economic growth, but growth that is also environmentally sustainable and socially inclusive - that is green growth.

✶VEM: Thank you!

Đức Trí *(Implemented)*

France joins hands with Vĩnh Phúc province in waste treatment

The French government will continue to prioritize support to Vĩnh Phúc province on environmental issues through investment in local projects. This is an affirmation of Bertrand Lortholary, Ambassador of the Republic of France to Việt Nam in the meeting with Nguyễn Văn Trí, Chairman of People's Committee of Vĩnh Phúc province on March 7.

According to Ambassador Bertrand Lortholary, France is currently funding two projects in Vĩnh Phúc province, including the Waste Management Project for rural areas in Vĩnh Phúc Province. Phase 1 of the project lasts 3 years from 2016 - 2019 with a total cost of 1,035 million euros (over 27 billion).

The project has been implemented in 24 communes in 2 districts of Bình Xuyên and Vĩnh Tường with about 219,912 beneficiaries. The objective is to minimize the overburden of landfills and the negative impact on the environment of waste disposal activities.

Ambassador Bertrand Lortholary said that Vĩnh Phúc province has the advantage of geography suitable for introducing French businesses to strategic locations for investment.

During the visit to Vĩnh Phúc, Ambassador Bertrand Lortholary visited the waste treatment sites that the project was developing■

Thu Hà *(Monre source)*

USAID-funded project to improve biodiversity in Quảng Nam

The United States Agency for International Development (USAID) launched the 24-million-USD Green Annamites Project in Tam Kỳ city, the central province of Quảng Nam on March 27 to help it preserve local biodiversity and improve people's livelihoods.

The project aims to better manage more than 400,000 hectares of natural forest and protect endangered plants and animals. It also looks to improve the livelihoods of 20,000 forest-dependent people in Quảng Nam and neighbouring Thừa Thiên - Huế provinces.

The project will be carried out in 11 cities and districts of Quảng Nam until 2021 with total investment of more than 14 million USD.

▲ *USAID Vietnam Mission Director Michael Greene talks with leaders of Quảng Nam province at the ceremony*

Forests play a crucial role in Việt Nam by protecting watersheds which slow soil erosion and alleviate climate change. Forests in the Annamites Range of Việt Nam are home to rare and endemic species found nowhere else in the world. However, in recent times, these forests, and the species that live in them, are disappearing at an alarming rate, as nearby communities increasingly depend on these limited resources for their livelihoods.

In such context, the USAID Green Annamites Project will engage small-hold farmers and their families to boost livelihoods and increase investment in climate-smart agriculture in Thừa Thiên - Huế and Quảng Nam while maintaining the natural biodiversity of these provinces.

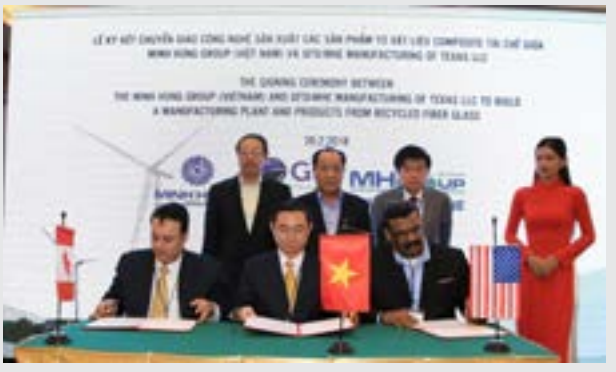
It will help the 2 target provinces reduce deforestation and forest degradation, and restore degraded landscapes. From partnering with the private sector, which sources materials from forests and local farmers, to introducing improved farming practices and strengthening market access, the project will help local forest-dependent communities diversify and adopt sustainable livelihoods.

The project also includes actions for improving forest conservation planning, increasing the knowledge and skills of local forest managers and decision makers and helping local communities live in harmony with protected forests.

Climate change directly threatens Vietnam's sustainable development goals. To accelerate its transition to low-emission development, the country has collaborated with USAID to better respond to climate change through adaptation, sustainable landscapes and clean energy programmes in recent years■

Châu Long *(VNS source)*

US - Việt Nam tie up to develop $50-million recycling facility



▲ *The two sides inked the MOU to develop a world-class recycling facility in Việt Nam*

GFSI - MHE Manufacturing of Texas LLC signed a memorandum of understanding with Minh Hung Group of Việt Nam to build and operate Southeast Asia's largest recycling production facility in Việt Nam.

Located in the Mekong Delta province of Tiền Giang, the facility has an estimated investment of $50 million. Once put into operation in 2019, the facility will manufacture plywood from recycled fiberglass.

Under the agreement, GFSI-MHE Manufacturing of Texas LLC will provide the technology, operational experience, and equipment for this process. MH Group, along with Minh Hung Group, will provide the investment and commercial expertise to drive the initiative.

According to statistics from the Ministry of Natural Resources and Environment, Việt Nam discharges around 28.5 million tonnes of solid waste per year, most of which is buried in landfills. There are several polluted landfills due to the lack of an adequate collection system, leachate treatment, and recycling technologies.

The large waste discharge poses challenges to environmental protection but presents opportunities to convert it into industrial materials and energy. The solution offered by GFSI-MHE Manufacturing of Texas LLC will help recycle a large volume of waste, including old composites and fiberglass.

Minh Hung Group is among the 80 enterprises holding the Vietnam Value 2016 certification by the Vietnam's government and has received many important and coveted awards, such as the Top 500 Fastest Growing Enterprises in Việt Nam and the Top 500 Biggest Private Enterprises in Việt Nam.

GFSI-MHE Manufacturing of Texas LLC is a joint venture (JV) between the US' Global Fiberglass Solutions Inc. (GFSI) and Canada's MHGroup. The company recycles spent and damaged fibreglass wind turbine blades into a plywood and sheetrock substitute material known as Ecopolypanel™ at its large-scale JV manufacturing facility in the US■

Vũ Nhung

Piloting Japan's clean water treatment technology

Delegation of UN-Habitat, Daiken Company and Japanese experts team had a working visit in Cần Thơ city so as to introduce Japan's Aqualift technology.

Aqualift technology can clean 400cu.m of water with the cost of 5 dolars. Sachoyo Hoshino, a Japanese expert, said that Aqualift technology is being used in Japan, suitable for water treatment in rural areas or places without clean water systems.

Using the technology in 1.5 months will reduce turbidity, odors, 80% BOD_5 and 84% COD and bottom layer. In addition, it maintains the habitat for aquatic systems in ponds. The environmentally friendly technology, at the same time, save much money.

In the coming time, at the Vocational Training School for the Disabled in Cần Thơ City will construct a 100cu.m water tank and pilot the Aqualift technology at Xáng Thổi Lake, Ninh Kiều District to monitor the results of water improvement. If achieved good results, the model will replicate in other places■

Đức Anh *(Monre source)*

ADB supports waste-to-energy plants in Việt Nam

On February 2, the Asian Development Bank (ADB) in Việt Nam revealed that it has signed a 100 million USD loan facility agreement with China Everbright International Limited (CEIL) to help a series of municipal waste-to-energy (WTE) plants in first and second-tier cities in the Mekong Delta region. This initiative will be the first municipal WTE public-private partnership (PPP) project in the country.

Christopher Thieme, Deputy Director General of ADB's Private Sector Operations Department said that the agreement will be a new model to improve solid waste management in cities, and also mitigate climate change by reducing methane and increasing energy generation from renewable sources.

Việt Nam generates more than 27.8 million tonnes of waste annually. Most of the waste collected are disposed in landfills in an unhygienic manner. This poses a significant health threat to nearby communities, mostly urban poor. One of the most effective ways to treat and manage this increasing quantity of municipal solid waste is through WTE, which can reduce waste volume by 90% and eliminate greenhouse gas emissions, while also producing energy from the heat of the waste during incineration.

ADB's assistance will support the construction and operation of a series of WTE plants with advanced clean technologies in multiple municipalities in Vietnam. Each WTE plant will treat municipal solid waste and supply electricity to the local electricity grid. CEIL will develop and invest in WTE subprojects in Vietnam to facilitate the harmless treatment, reduction, and reuse of household waste in the cities and produce clean electricity.

CEIL is one of the world's leading integrated environmental protection companies with environmental protection projects spanning 18 provinces and municipalities in the People's Republic of China. As of end of 2017, CEIL had 43 WTE projects in operation with a combined processing capacity of 39,100 tonnes/day and generation capacity of about 4,300 gigawatt-hours per year.

ADB, based in Manila, is dedicated to reducing poverty in Asia and the Pacific through inclusive economic growth, environmentally sustainable growth, and regional integration. Established in 1966, it is owned by 67 members - 48 from the region■

Bích Hồng *(VNA source)*

WB supports emission reduction programme in central region

The World Bank (WB)'s Carbon Finance Unit approved a resolution on supporting the Reducing Emissions from Deforestation and Forest Degradation (REDD) programme in the Northern central coast Việt Nam in line with the results-based payments at a meeting in Paris on February 1.

Speaking at the event, Deputy Minister of the Ministry of Agricultural and Rural Development (MARD) Hà Công Tuấn highlighted Vietnam's efforts and successes in escaping from poverty and promoting sustainable development over the last 30 years, saying that the country completed almost all Millennium Development Goals ahead of schedule, especially those regarding poverty reduction.

Việt Nam is responsibly realizing its commitments to coping with climate change, reducing greenhouse emission by 8%, even up to 25% by 2030 if the country get international support and cooperation, he said, adding that the country regards the REDD as a vital measure to promote the ambitious goal.

Tuấn took this occasion to thank donors and international organizations for assisting Vietnam in preparing for the implementation of the REDD in recent years.

Việt Nam hopes to continue receiving assistance from international friends, and the country is willing to join hands with the international community in implementing the REDD, he said.

While joining the meeting, the official worked with the Director of the WB's Carbon Finance Unit, and had a bilateral discussion with Deputy Minister of Land, Environment and Rural Development of Mozambique Celmira da Silva on issues of common concern. He also met with representatives Green Climate Fund (GCF) to put Vietnam's proposal for the REDD in the Central Highlands.

According to the MARD, Việt Nam is the first country in Asia and the seventh in the world that is joining the Forest Carbon Partnership Facility (FCPF) managed by the WB.

Vietnam's forest area has ceaselessly increased from 28% in 1990 to 41.45% in 2017■

Gia Linh *(VNA source)*

EU supports sustainable energy development in Việt Nam

▲ *European Commission Director-General of International Cooperation and Development Stefano Manservisi speaks at the ceremony*

The EU-Việt Nam Energy Facility was officially launched by the European Commission and the Ministry of Industry and Trade in Hà Nội on February 27.

It is a technical assistance facility in support of the implementation of the European Union's (EU) Energy Sector Policy Support Programme and is worth EUR108 million.

The programme aims to enhance the access to sustainable energy in rural areas in Việt Nam and contribute to a more sustainable energy sector by promoting efficient, clean and renewable energy for all citizens.

The EU-Việt Nam Energy Facility, co-financed by the EU and the German Federal Ministry for Economic Cooperation and Development-BMZ, under the framework of Phase II of the Renewable Energy and Energy Efficiency Project, will be operated by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close cooperation with the Ministry of Industry and Trade.

At the launch, European Commission Director-General of International Cooperation and Development Stefano Manservisi said that the programme will not only support the government of Việt Nam to achieve its objective in the 2013 - 2020 programme on providing an electricity supply to rural, mountainous and island areas and delivering reliable and sustainable electricity access to up to 1,200,000 households in rural areas, but will also enhance the governance of the energy sector to facilitate the shift to a more sustainable energy development path in Việt Nam.

According to Minister of Industry and Trade Trần Tuấn Anh, over the past few years, the energy sector in Việt Nam has been developed rapidly and sustainably and this development is a key factor in maintaining the high socio-economic growth in the country.

The government of Việt Nam is committed to its socio-economic development and ensuring the provision of power to the whole country, including in remote areas where 2% of the population still do not have access to electricity, he noted■

Lê Chính *(VEA source)*

Forum spotlights Việt Nam-Switzerland cooperation for green growth

A high-level forum took place in Hà Nội on April 4, discussing potential for cooperation between Việt Nam and Switzerland toward green development.

Addressing the forum, Minister of Planning and Investment Nguyễn Chí Dũng said the Swiss Government has supported the private sector development in Việt Nam, particularly in optimizing usage of natural resources and translating the clean production concept into reality.

Dũng expressed his belief on the good potential for bilateral partnership in green growth arena, based on their fruitful political, diplomatic, and economic relations.

He noted that the 2 nations had agreed to focus their cooperation during 2017 - 2020 on building effective economic intuition and policies, fostering a competitive and efficient private sector, and promoting sustainable urban development adaptive to climate change.

Doris Leuthard, Director of Switzerland's Federal Department of Environment, Transport, Energy and Communication, suggested Việt Nam study and apply methods to mobilize resources for green growth from the community and businesses.

Swiss participants shared their experiences on building a clean and green economy, mobilizing resources for the process, and lessons that could be applied for developing countries like Việt Nam.

Việt Nam has adopted a national plan on green growth for 2016 - 2020, with prioritized subjects including climate change response, green production, green consumption, and greenhouse emission reduction.

To date, the country has seven ministries and 39 provinces and cities designing and implementing their own action plans for green growth■

Bùi Hằng *(VNA source)*

24 criteria for green growth urban development

Dr. Trần Quốc Thái
MSc. Lê Hồng Thủy
Department of Urban Development, Ministry of Construction

In the face of rapid urbanization, along with the impact of global issues, cities must have a long-term vision and plan, and build a sustainable foundation for the growth based on competitive incentive and high efficiency. Green growth (GG) urban development will be a fundamental shift in systematic thinking about urban growth; and to achieve that goal, there is a need for consistent involvement from all levels sectors and social stakeholders. With proper way of thinking, appropriate roadmap and innovative solutions, the GG urban areas will contribute an important part to the implementation of the National Strategy for GG approved by the Prime Minister. In the spirit of the constructive and facilitating government, the targets of GG urban development issued (Circular No.01/2018/TT-BXD dated 5/1/2018 by the Minister of Construction) are the basis for detailed guidance for cities to propose specific programs and actions based on the results of the implementation in the current period in order to renovate the growth model in a more sustainable manner, and make a considerable change in the implementation of the GG objectives.

According to the Organization for Economic Co-operation and Development (OECD), a GG urban area defined as a city that achieves the growth and economic development through urban policies and activities to reduce the negative impacts on the environment and natural resources.

In each country, cities have been applying various ways of managing urban construction, formation and development towards the targets of development in each stage. However, along with the rapid process of urbanization, it is necessary for the issues as well as the challenges to be concerned about and addressed; besides, the impacts have become more and more complex. Thus, the results-based management implemented to improve the effectiveness of management activities, promote initiatives and creativity in the development process and maximize the capacity and responsibility of the stakeholders. International organizations such as the OECD and OIOS of the United Nations define the results-based management as a management strategy that emphasizes the effectiveness of implementation and the completion of products, results and impacts that have been predefined. Results-based management focuses not only on short-term products, but also the impacts of the development results on the targets of sustainable development, towards the sustainable future of the society.

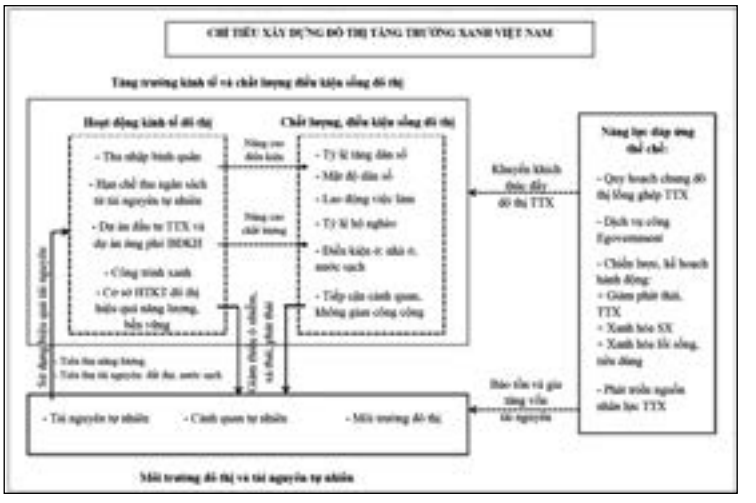
▲ *GG is an opportunity to improve the quality of life for urban residents*

The objectives of GG urban development are new issue in urban management practice in the world, in general, and in Việt Nam, in particular, so the application of the results-based management perspectives will allow cities to actively and creatively propose solutions that are suitable for the specific conditions and development practices of each locality.

Over the past time, many urban models that are similar to the viewpoint of GG urban area have been researched and applied to Việt Nam such as Green city, Ecological city (Eco city), Economic - ecological city (E2 City), Economic - ecological and Equality city (E2 and Equity City), Smart City or Ubiquitous City. The world's leading cities in implementing GG efforts have been only initially successful in some specific fields such as public transport, emission reduction, ur-

ban greening, green building development... The common viewpoint is that there is no universal model that can be applied to every city. With each urban area, it is vital to assess the overall situation of the development so as to determine the orientation, strategy and roadmap for the implementation of the objectives of GG urban development for each specific context, characteristics and conditions of cities' socio-economic development.

At present, in Việt Nam, due to the lack of consistent regulations of competent state management agencies on GG urban development indicators, the local authorities have no grounds to conduct the review, proposal for amendment, supplementation and updating of indicators on urban development orientations (planning, development programs...), as well as to research, formulate and promulgate specific mechanisms and policies aiming to promote urban development towards GG orientation. The attraction of investment priorities for urban development and evaluation of the effectiveness of investment targets compared to the GG targets have many difficulties. Urban development has not been systematically implemented and has not promoted effectively the participation of the authorities at all levels and the community. On the other hand, the monitoring and evaluation of the implementation of GG urban development have not been implemented periodically in order to detect problems and shortcomings to adjust and supplement suitably with the evolution of the annual and 5-year socio-economic situation of urban areas.



According to a survey conducted by the National Institute for Urban and Rural Planning in July 2017, only 35% of urban areas have developed and adopted the GG Urban Development Action Plan; more than 50% of urban areas have directives from the municipal Party Committees and authorities. In order to contribute to solving the difficulties of localities in the process of urban development, the Ministry of Construction has studied and promulgated Circular No. 01/2018/TT-BXD dated 5/1/2018 that accentuates 24 indicators for GG urban development, which is applied for the development practice of urban areas in the current period.

Indicators are developed in the viewpoint of results - based management to be implemented and applied to each specific content. The annual result of implementation is compared with the baseline year in order to evaluate and recommend targets, tasks and solutions that need to be prioritized for the following years. The indicators are divided into 4 groups (economic, environmental, social and institutional). There are 5 indicators in the economic group, 10 in the environmental group, 4 in the social group, and 5 in the institutional group.

Economic indicators help assess the efficiency of economic growth through the use of energy and natural resources in investment in urban construction and development. Environmental indicators assess the quality of urban environment quality and landscape, the level of application of solutions in energy efficiency, renewable energy, environment protection, reduction of pollution and greenhouse gas emissions in urban development. Social indicators help to eval-

▲ *GG Urban Development aims to reduce adverse impacts on the environment and natural resources*

uate the effectiveness of improving the quality and living conditions of urban dwellers. Institutional indicators aim to assess the management, direction and administration of urban authorities for GG urban development.

Indicators for GG monitoring set out in the National Strategy on GG such as pollutant concentration level, CO_2 and greenhouse gas emission, and energy consumption ratio... are necessary. However, the monitoring of the above indicators in the urban areas requires synchronous and specialized equipment as well as analytical capabilities of the staff. At present, there is no method for assessment of greenhouse gas emissions applied for urban areas of Việt Nam. Therefore, the indicators have been considered and selected in accordance with the reality of urban areas in the current period in order to satisfy the requirements of the National Strategy on GG, at the same time, to ensure the conditions for implementation and maximize the use of the current state management system of urban areas.

A new approach to result-based management through annual monitoring of performance indicators will effectively support urban authorities in implementing the GG targets. At the same time, GG projects and programs will also offer new growth opportunities for economic sectors, investment and energy, especially the improvement of the quality of life for urban residents. Although the realization of GG urban objectives is difficult and challenging, it is certainly the shortest path towards sustainable development■

COASTAL ECONOMIC ZONES OF VIỆT NAM:

Strengthening of technological innovation and reduction of greenhouse gas emissions

Dương Văn Mão
Ministry of Industry and Trade

In the reforms period, the Party and the State paid special attention to the development of coastal economic zones in order to turn our country into "a country strengthening from the sea and enriching from the sea." To promote the potential of the sea, the 4th Plenum of the 10th Party Central Committee adopted Resolution No. 09-NQ/TW dated 9/2/2007 on the Vietnam Marine Strategy by 2020, which sets the target that the coastal economic zones will have contributed about 53-55% of total GDP of the country by 2020. With fast-growing scale, the structure of industries and occupations shifted towards industrialization and modernization, the coastal economic zones of our country have formed a number of agricultural, industrial and service promotion centers. However, the exploitation and use of resources in coastal economic zones is unsustainable. To meet the new development requirements, coastal economic zones need to develop in the direction of technology innovation, reduction of greenhouse gases (GHG) emission and aim to develop the low carbon economy.

At present, there are 17 coastal economic zones established, attracting 254 foreign investment projects with a total registered capital of US$ 42 billion, and 1,079 domestic investment projects, with a total registered investment capital of about VND 805.2 trillion. In addition, there is one economic zone (Ninh Cơ economic zone, Nam Định province) included in the planning, has yet to be established. Over the past 10 years of development, the coastal economic zones have contributed to promoting the socio-economic development of localities. Production and business projects in economic zones have filled up 40% of the total land area used for agricultural production, industry, tourism and services in the coastal economic zones. At present, some important projects in economic zones have been completed and put into operation such as: Dzung Quất Refinery; Doosan Heavy Industries Vietnam Limited (Dzung Quất Economic Zone); Chu Lai – Trường Hải automobile mechanical industrial zone (Chu Lai open economic zone), cement plants, thermal power plants in Nghi Sơn economic zone. According to the calculation of the management boards of coastal economic zones, in general, the total CO_2 emission of the coastal economic zones in 2010 in economic development fields such as industry, agriculture and services was over 7.42 million tons (average per capita emissions of 4.06 tons of CO_2), mainly from thermal power plants. It is predicted that by 2020, the coastal economic zones will have 15 thermal power plants with a total capacity of 16,629 MW according to the high electricity power production plan, 13 plants with a total capacity of 11,678 MW according to the average electricity production plan, and 11 plants with a total capacity of 9,767 MW according to the low electricity production plan. Thus, the level of greenhouse gas emissions of thermal power plants in coastal economic zones will be very large. It is estimated that in 2020 the greenhouse gas emission

▲ *Development of clam culture area in Thái Bình coastal zone*

will increase 5.76 times for the low electricity production plan; 7.54 times for the average electricity power production plan, and 11.09 times for the high electricity power production plan.

In order to renovate technology and reduce greenhouse gas in coastal economic zones, in the coming years, Việt Nam needs to continue developing and completing mechanisms, policies and legal documents to ensure the harmonious benefit in the exploitation and use of natural resources for sustainable development. At the same time, the countermeasures to reduce the greenhouse gas emissions should be implemented in each economic development area in the coastal economic zones, especially in industries and fields that cause much emission:

Power production: Promoting boiler efficiency by renovating equipment and technology, improving the efficiency and quality of electrostatic precipitators, using DO oil during the start-up of furnaces, installing the monitoring system to control the wastewater discharge, temperature and pH of the wastewater before discharging into the environment, and by elaborating plans to prevent and respond to environmental incidents. In addition, it is necessary to develop renewable energy, wind power, solar power and biomass energy, in order to provide fuel for living in the area.

Agricultural production: In livestock production, it is necessary to strengthen measures to manage waste, inventory and monitoring of greenhouse gas emission; integrate countermeasures for greenhouse gas emission reduction into economic development programs; promote agricultural extension activities. At the same time, researching to select and create livestock species with capability of high absorption, high productivity and resilience to climate change; replacing low-yielding livestock with high-yielding one; adopting better feeding methods; reducing overall emission reduction while maintaining or increasing supply of livestock products (conversion from cows, sheep and goats that have large amount of methane emission to pigs and poultry). In addition, it is vital to introduce appropriate nursing measures to limit the release of nitrogen and phosphorus into the environment (low-carbon production); develop technologies for treating and reusing animal waste to reduce environmental pollution, increase economic efficiency and reduce greenhouse gas emission; study the possibilities of generating electricity from biogas energy; re-energize and improve animal waste management.

In crop production, adopting intermittent instead of continuous submerging regime in paddy fields will limit CH4 emission, increase the use of organic fertilizers, reduce the use of chemical fertilizers…

Development of transport infrastructure: Building coastal transport routes linking economic zones is considered as the basis of creating linkages between coastal economic zones; mobilizing capital sources (ODA, FDI, State budget and Government bonds) in order to continue investing in the construction of essential and important infrastructures in economic zones. To ensure the environmentally- friendly traffic conditions, it is essential to synchronize traffic development with drainage and greenery systems, and reduction in concretization in construction processes… On the other hand, it is necessary to conduct reviews to gradually eliminate technology and equipment that are ineffective and environmentally- unfriendly, to pilot and deploy dissemination of renewable energy applications, low energy consumption technologies (solar batteries, led lights...) on lighting items and traffic lights.

In addition, seaports, ports, trans-shipment zones, ship repair facilities of coastal economic zones must be equipped with modern means for receiving wastes or treatment plants for wastes from ships. If ports are not equipped with receiving facilities, they must contract with organizations or individuals having the function of providing and implementing waste treatment services. Means of waste transportation have to meet the requirements on technical safety and environmental protection; The technology for treatment of wastes from ships must meet environmental standards and be suitable with the conditions of Việt Nam■

FrieslandCampina Vietnam aims to Green development

Recently, FrieslandCampina Vietnam has been ranked among Top 100 sustainable businesses in Việt Nam 2017. The list has been drawn up by the Vietnam Business Council for Sustainable Development of the Vietnam Chamber of Commerce and Industry along with the Ministries of Labour, Invalids, and Social Affairs, Industry and Trade, Natural Resources and Environment, the Vietnam General Confederation of Labour, and the State Securities Commission of Việt Nam. This is the second year that FrieslandCampina was ranked. On the occasion of Lunar New Year 2018, Vietnam Environment Administration Magazine (VEM) has had a conversation with Mr. Arnoud van den Berg - Managing Director of FrieslandCampina Vietnam about its 20 years journey in Việt Nam.

▲ *Managing Director of FrieslandCampina Vietnam Arnoud van den Berg has given a speech at nutrient education conference*

✶***VEM: Can you share with us some highlights during the development of FrieslandCampina in its 20 years journey in Việt Nam?***

Mr Arnoud van den Berg: In the development of more than 20 years in Việt Nam, FrieslandCampina supplied more than 1.5 billion high quality milk units every year with many favorite brands such as Dutch Lady, Friso, Yomost, contributed for improving health and development of Vietnamese.

Currently, FrieslandCampina Vietnam has been continuously developing, growing, and has become a big "family" of over 8,000 members in size under professional and international business model. According to that, FrieslandCampina Vietnam has also contributed to Vietnam's development with measures following very close to the Government's 2000 - 2015 Millennium Development Goals and 2015 - 2030 Sustainable Development Goals such as Green Growth program - A typical example for environment protection, community nutrition and clinical nutrition programs which have contributed to success of National Nutrition Strategy.

✶***VEM: It is said that FrieslandCampina Vietnam and Vietnam Red Cross Society has implemented "cow bank" project for years. Would you let us know the effectiveness of this program toward local farmers?***

Mr. Arnoud van den Berg: FrieslandCampina Vietnam in collaboration with Vietnam Red Cross Society have continuously participated in this project for 7 consecutive years, which contributed more than 400 cows. The funding is contributed by farmers themselves to help the others. Therefore, "cow bank" project has brought practice values for other poor farmer families, encouraged them to overcome and develop sustainable business. It is known that, the first cows which were given to farmers in the North of Việt Nam have given birth and the calves have already been given to other farmers.

✶***VEM: Beside its activities to create shared value for society, FrieslandCampina also has high responsibility for the environment. Please share with us example of how FrieslandCampina Vietnam use technology to protect environment?***

Mr. Arnoud van den Berg: In recent years, FrieslandCampina Vietnam has been evaluated as a pioneer company that well following the legal regulation in environment protection. At the same time, the company has earned many highlighted achievement recognized by Governmental departments via its contribution for society's value and its vision to green development.

In which, FrieslandCampina Vietnam was honored to receive "the best sustainable company" at the BeneLux awards organized by Dutch Business Association in Việt Nam (DBAV) and Belgian-Luxembourg Chamber of Commerce in Việt Nam (Beluxcham) and many awards from Vietnamese Government such as: The certificate of merit from the Prime Minister for the significant contribution to rural development

of Việt Nam in the period of 2011 - 2015, the awards from the Ministry of Natural Resources and Environment for the excellent achievements in environmental protection.

Besides, Royal FrieslandCampina and FrieslandCampina Vietnam always look to green development. We put the environmental factors as the priority during the supply chain, with the purpose to minimize the possible threats to environment such as reduce the amount of CO_2 emission, save water… In Vietnam, FrieslandCampina successfully reduced the use of energy by 15%, water by 25% and cut CO_2 emissions by 40% compared to 2010. Globally FrieslandCampina also minimizes the use of natural resources. In 2015, it has for instance improved the global energy efficiency with 0.4%, reduced water usage with 0.6%, increased green energy from 43% - 65% of total energy consumption, lowered CO_2 emission per kg in production with 4.3% and increased waste recycling from 67% - 72% in 2015. FrieslandCampina is working on the innovation-driven creation of greater sustainability in both production chains and dairy farming.

At the moment, 2 factories of FrieslandCampina Vietnam which are located in Binh Duong and Hanam provinces are well equipped with latest technologies, automatic production management, closed wasted water treatment, save energy solution and the use of clean energy with the purpose to protect environment.

▲ *Dutch farmers guide the breeding techniques*

Besides, FrieslandCampina Vietnam signed MOU in 3 years with Vietnam Environment Administration to implement "Green Creativeness" program, focuses on providing public education about environmental protection via contests, excursions… With the purpose of developing business and protecting environment at the same time, FrieslandCampina Vietnam has contributed to sustainable development via its effort to balance between business activities with social responsibilities.

✶***VEM: In order to promote the development of active lifestyle and a proper nutrition while mentioning about important role of milk in development of Vietnamese children, what activities that the company has implemented?***

Mr. Arnoud van den Berg: The campaign called "Drink - Move - Be strong" initiated by FrieslandCampina Vietnam based on the concept of daily diet, nutrition and exercise affecting a child greatly

In 2017, in collaboration with Vietnam Red Cross Society, FrieslandCampina conducted program called "Nutrition education and Vietnamese kids development" reached to more than 65,000 kindergarten and primary school students, and 250,000 families. Through that, spreading the message of Drink - Move - Be strong campaign, reaching to the objective "build up proper and better nutrition for Vietnamese"; decreasing malnutrition rate, minimizing obesity and overweight; improving physical and mental development for Vietnamese children. The students were taught the formula for health and comprehensive development: eating three proper meals every day comprising all four groups of essential nutrients, namely carbohydrates, protein, fat, and vitamins; drinking two glasses of milk each day; and engaging in physical activities for one hour. The Red Cross invited nutritionists from the National Institute of Nutrition to train the main representatives of its branches in provinces and cities, who then teach teachers at schools in their locality.

✶***VEM: Can you share with us what would be the next activities of FrieslandCampina that aims to Green Development?***

Mr. Arnoud van den Berg: Being heritage from available background as well the strategic development in term of Corporate Social Responsibility, FrieslandCampina Vietnam will seriously continue following law and regulation about environmental protection. FrieslandCampina Vietnam is aiming to such activities that will strongly engage with stakeholders and public, together conducting sustainable programs which help minimizing negative effects on mass environment while bringing back economic benefits.

✶***VEM: Thank you!***

Quỳnh Anh *(Implemented)*

Coastal crisis: Mangroves at risk

Mangroves support coastal communities around the world, but pollution is threatening these important ecosystems.

▲ *Marine debris can impact important breeding grounds and habitat for many reef fish, shrimp, birds and other animals*

Vegetated coastal habitats - mangrove forests, salt-marshes and seagrass meadows - have much in common with rainforests. These "blue forests" are hot spots for biodiversity, are known for their large carbon sink capacity, provide important and valuable ecosystem benefits to local communities - and they are experiencing a steep global decline.

However, while society is well informed of the benefits and threats associated with rainforests, there is a comparative lack of awareness of the status and benefits of vegetated coastal habitats.

Mangrove forest areas across the world have varying levels of pollution, but the situation is worsening. Mangroves are often used for dumping waste, including plastics that do not biodegrade, harming both these ecosystems and the species living there.

UN Environment mangrove ecosystems expert Gabriel Grimsditch says greater awareness of pollution and its impact is needed to help preserve coastal ecosystems. It is important to reduce and control land-based sources of pollution to mangrove forests to ensure that they continue delivering valuable ecosystem services to coastal communities and the world.

According to the findings of a 2016 study by the United States National Oceanic and Atmospheric Administration:

- Marine debris can cause the death of the animals that live in the mangroves and suppress the habitat.

- Mounds of rubbish in tidal channels can be detrimental to near-shore habitats and their associated species.

- Rubbish can inhibit tidal flushing and increase salinity levels, stressing the habitat.

- A direct local economic impact can be seen when word gets out that the mangroves are polluted and tourists stay away.

Based on the study, the accumulation of marine debris can alter and degrade marine habitats through physical damage caused by abrasion, shearing, or smothering, and can change the physical and chemical composition of sediments. Physical damage often impairs critical nurseries and refuges used by many different organisms that occupy these habitats and may reduce the quality of habitat for organisms whose daily activities (feeding, reproduction) require the use of specific environments.

A 2013 study on the effect of waste on mangrove functionality indicates that there may also be a potential link between mangrove pollution and carbon sequestration, as salinity stress can lead to mangrove mortality and less productive mangrove ecosystems.

A 2015 study of the impact of pollution on mangrove biodiversity in India concludes that chemical pollution, particularly the accumulation of toxic metals, could be a significant factor in reducing mangrove biodiversity. The study found that more pollutants lead to a proliferation of pollution-tolerant mangroves as more sensitive species die off, leading to reduced mangrove biodiversity. 5 of the 6 mangrove habitats in the Indo-Malayan eco-zone are shared by 2 or more nations. Regional cooperation for transboundary ecosystem management needs to be enhanced.

The UN Environment Assembly, the world's highest-level decision-making body on the environment, gathered in Nairobi, Kenya, from 4-6 December 2017 under the overarching theme of pollution■

▲ *Marine debris being cleaned from a tourist mangrove boardwalk in Bali, Indonesia*

Nhật Minh
(UN Environment source)

Do not let superstition overshadow spiritualism

Vũ Ngọc Lân

Spirituality and spiritual culture are closely related. This can have a strong impact on the natural environment, not only polluting resources (water, earth and air) but also damaging the ecosystem and biodiversity. Therefore, it is necessary to protect the spiritual environment to help protect the natural environment.

Every year, starting from spring, more than 8,000 festivals are held across the country. The Tết (Vietnamese Lunar New Year) is the biggest festival of the nation, and ceremonies and feasts are vital parts of it. Tết and other spring festivals are spiritual events in which the Vietnamese people often show their diversified, profound daily activities, such as worshipping their ancestors, local deities, national heroes and other famous people.

Every family has a tradition to worship their ancestors, parents, grandparents, heroes and martyrs who had contributed immensely to the development of the country. The Vietnamese spiritual culture is based on the principle that a person should be able to perform the same daily activities in the afterlife just like in this world.

However, besides the positive impacts, spirituality also gives rise to many superstitious beliefs and actions that defy the normal. Superstition can make people blind and damage their spiritual culture and environment. The Vietnamese people believe that the dead should live a separate life, although similar to their life on Earth, no matter where they come from and how educated or wealthy they are. During the year-end period, people often go to cemetary to clean the surrounding areas of graves. But in recent times, families of the dead have gone overboard by spending too much money for the dead. Worshipping the ancestors and other dead people is a respectful thing to do, but excess of it can negatively affect the environment.

The Vietnamese people have buried their dead for a long time. As the number of graves have kept increasing one generation after another, the area of land for the living people has been decreasing. It's almost as if the dead and the living have co-existed in the country. In fact, there are now more large graveyards than apartment buildings and private houses, creating an ugly sight due to the lack of planning and design for cemeteries and graves. In some areas, the cost of land for a cemetery is more than the cost of a residential area. Out of jealousy for each other, people have spent more money to build bigger graves for their dead. The pressure of comparison only creates burden, often leading to bankruptcy and poverty.

▲ *The Hương Pagoda Festival in Hà Nội in the post-Tết (Lunar New Year) holiday often draws attention from a huge number of visitors*

Another strange practice of the Vietnamese people is to do everything in their power to ensure that their ancestors live a normal life after death. For this, in all the festivals, people often make votive offerings to the dead in the form of money, animals or belongings. The situation is getting worse as many people now tend to offer large sums of real money to the dead.

During festivals, people crowd temples, pagodas and other spiritual places, organizing huge feasts to ask forgiveness and blessings from the gods for a strong, healthy and prosperous life. People believe the grander the feasts, the greater will be the blessings. Such actions have encouraged conmen to become monks, priests and middlemen to milk money from the spiritual people. No government agency has so far calculated the amount of votive offerings, but they are estimated to be worth trillions of dongs. Moreover, burning of votive offerings leads to environmental pollution, which is immeasurable. Sadly, no one has tried to stop or reduce such unreasonable practices.

The Trần Temple Festival marks the beginning of administrative work for government agencies and officials

after the Tết holidays. But in recent years, this festival has become a platform for these officials to seek promotions in their careers. They often step on and fight each other to acquire a symbolic stamp in the hope of professional prosperity. And those who cannot fight for a symbolic stamp can buy one in front of the temple.

During the festival, the Trần Temple is visited by parents in large numbers to seek blessings for their children. They often fight each other to be the first one to seek the blessings. As a result, the atmosphere at the temple turns chaotic.

Wise people will understand that a real god will bless all mortals and fulfil their wishes irrespective of whether they visit temples or make offerings. They will understand that if a god demands offerings, he does not deserve to be worshiped.

These actions are what pollute the spiritual culture, and people must be made to realise the mistakes they are committing. Sadly, even well-educated, high-ranking officials have fallen prey to such blind faith. Our ancestors have said, "Helping a real person is always better than building nine pagodas," and "Taking care of our parents is more necessary than spending an entire day at the pagoda". These sayings affirm the humane principle of the spiritual culture. The air today is heavily polluted around the world due to the development of industries and urbanisation. However, according to the Buddhist principle, it is the human mind that is polluted, which has led to impure actions. Therefore, to protect the spiritual culture, each one of us needs to clear our mind. The Buddhist philosophy encompasses living a "clean and unbiased life", which does not involve fighting, greed, begging, selfishness, self-interest and lies.

All these elements are part of our spiritual culture, and they have both direct and indirect impacts on our ecosystem and environment■

Eco-spiritual tourism development potential of Tây Yên Tử Nature Reserve

▲ *Tây Yên Tử Nature Reserve is the home of many gene sources of rare plants and animals*

Established in 2002, Tây Yên Tử Nature Reserve covers 4 communes: Luc Son (Luc Nam District) and An Lac, Thanh Luan, Tuan Mau, Thanh Son Town (Son Dong District), Bắc Giang province. It is home of many rare and valuable animals and plants with high scientific value, creating great potential for eco-spiritual tourism development.

Tây Yên Tử Nature Reserve has a total area of 13,022.7 ha of forest and forestry land, with an average height of 300 - 1000m above sea level. According to statistics, the flora includes 728 plant species, belonging to 189 genera of 86 families, typically such as Fokienia, catalpa, ironwood, Mukulungu, mahogany, Chittagong wood (Chukrasia tabularis), santai wood, 5 leaf pine, Dacrycarpus imbricatus... In addition, the flora of Tây Yên Tử Nature Reserve is diversified in terms of use value: Group of timber accounts for 32.3% (ironwood, magnolia, Mukulungu, apitong, goldden oak, 5- leaf pine, santai wood...); group of medical plants accounts for 20.9% (longjack, dwarf umbrella tree (Schefflera petelotii, bitterleaf (Vernonia andersoni), Chinese tinospora (Tinospora sinensis); Group of rare medicinal plants accounts for over 40% (aquilaria, stephania, chinaroot (Smilax glabra), wooly fern (Cibotium barometz), Gynochthodes officinalis, cinnamon...). In addition, there are group of ornamental plants (mainly orchids), group for construction materials, handicraft... Moreover, Yên Tử forest is the largest natural forest of Bắc Giang province and the North-East, in the extremely important position for protection, environment and climate regulation of the province, with a total timber reserve of nearly 1,000,000 m^3.

Tây Yên Tử Nature Reserve also has the rich fauna with 285 species, of which 1 species of special attributes, Sub-nosed

monkey (rhinopithecus), is of conservation priority; 18 species of endangered species (with 10 species listed in the World Red List in 2016 and 8 species in Vietnam Red Book in 2007); 5 species of which attributes indicate the quality of forest habitat (The François' langur (Trachypithecus francoisi), Sun bear (Helarctos malayanus), Asian black bear (Ursus tibetanus), Golden cat (Catopuma temminckii), Serow (Capricornis sumatraensis); 19 species of high economic value that are currently heavily exploited in the wild; 43 species of frogs, crocodiles... These are species of genetic conservation value that are paid much attention by the scientists in the country and the world.

Whereas Yên Tử is the place where Tran Nhan Tong Buddhist king's relics are kept after his death, Tây Yên Tử is his path of propagation of Buddhism. In particular, there are a series of relics works in the Tây Yên Tử side that are closely related to the formation and prosperity process of Truc Lam Yên Tử such as Vinh Nghiem Pagoda, Am Vai Pagoda, Ho Bac Pagoda, Binh Long Pagoda, Suoi Mo Temple... Many relics have been ruined over time and by wars, so Bắc Giang province has identified the embellishment, preservation and promotion of the value of these relics that play an important role in building and developing the culture. The system of pagodas, relics along with the greatness of the forest, mountains, vegetation cover and a variety of animals have created the potential, together with the East of the Yên Tử range (Quảng Ninh province) forming a unified Yên Tử tourist complex, contributing to the development of tourism.

In fact, the operation of Nature Reserves is facing great challenges and pressure from the economic development activities and local community... There are also a number of solutions to ensure the development objectives and support for conservation. In particular, eco-tourism and spiritual tourism are considered as an effective solution, not only contributing to creating jobs for local people, but also promoting the conservation and reduction of negative human impacts on forests, at the same time making a positive contribution to the socio-economic development of the locality. However, at present, eco-spiritual tourism of Tây Yên Tử Nature Reserve is still in the form of "potential", not yet "awakened", almost unexploited as a tourism product.

Tây Yên Tử Eco-spiritual Tourism Zone project in Tuan Mau Commune, Son Dong District is on the list of priority investment projects of the province in accordance with Decision No. 269/QĐ-TTg dated 2/3/2015 of the Prime Minister approving the master plan for socio-economic development of Bắc Giang province up to 2020, with a vision to 2030. After the above policy, the investor Tây Yên Tử Service Joint Stock Company has actively researched and proposed to all levels and sectors of the province the whole and long term investment plan, with the thorough objective of a tourism zone combining spiritual - historical - natural - ecological elements and the development of spiritual and historical values. It is expected that the 4 main tourist routes include: Route 1: Dong Thong - Dong Pagoda (Yên Tử); Route 2: Ba Thia Waterfall tourism; Route 3: Bieng Village tourism- Vung Tron - Khe Ro; Route 4: Gold Water - Giot Waterfall (Luc Son - Luc Nam). Tây Yên Tử Eco-spiritual Tourism Zone of Bắc Giang province will have many differences with that of Quang Ninh province. In addition to spiritual activities such as going to pagodas, visitors can also participate in religious activities such as: Vegetarian, religious therapy, meditation and eco-tourism activities such as: trekking, relaxing at the resort... After completion, the project will become a tourism highlight of Bắc Giang province, contributing to developing a new attractive travel itinerary with many experiences for domestic and foreign tourists.

Although Bắc Giang province has had a clear vision and orientation, the development of Tây Yên Tử tourism is facing many difficulties due to limited awareness, abundant human resources but not yet well-trained. Moreover, tourism activities are still fragmented, the promotion of tourism of the district has not been deployed extensively, poor tourist products and poor infrastructure have not met the requirements… which makes the development of tourism in Tây Yên Tử Nature Reserve not commensurate with the potential.

Eco-spiritual tourism will be a breakthrough, a new direction of Tây Yên Tử Nature Reserve in the coming time. However, whether this abundant source of tourism is exploited effectively depends on the efforts of the local government committees, the attention of Bắc Giang province authority and investors with early solutions for development to avoid wasting the "golden" potentials and advantages from the nature■

Hoa Vũ

Preserve rare amphibian species in Cát Bà Archipelago

▲ *Cát Bà Archipelago is covered with limestone evergreen tropical forests and home to many kinds of amphibian species*

The Cát Bà Archipelago belongs to the Cát Bà International Biosphere Reserve, which was recognized by the United Nations Educational, Scientific and Cultural Organization in 2004.

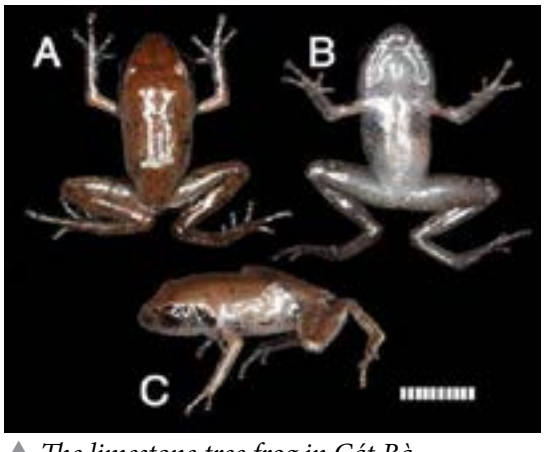
The archipelago contains 366 islands in the Gulf of Tonkin. Cát Bà is the largest island and is covered with an evergreen tropical forest growing on limestone mountains. The island is well-known for the large number of amphibians.

NEW AMPHIBIANS DISCOVERED

A research in 2011 recognized 17 new amphibian species in the Cát Bà Archipelago. Based on the analysis of forms and biological molecules, scientists from Việt Nam, Japan and Russia discovered 2 new species of tree frog-limestone tree frog and Cát Bà tree toad-in their recent field studies of the archipelago.

The limestone tree frog is a small species, measuring 17.7 - 21.1 mm, with the male being smaller than the female. This species has a thin body, long head and a bit of a sharp nose, with no vomerine teeth. There are no webs between the fingers, while foot webs exist only at the start of the toes. The brick-red back skin is covered in small spots.

The Cát Bà tree toad is also small, but its head and foot webs are quite large. Swimming webs exist between the fingers and toes, and the skin is grey or brown. Like the limestone tree frog, the Cát Bà tree toad is only seen in the Cát Bà Archipelago. There has been no research yet on the population, allocation and biological features of this species. However, a group of specialists from the Vietnam Natural Museum, the Institute of Ecology and Biological Resources, Japan's Kyoto University, Russia's Saint Petersburg Animal Institute and Cologne Animal Zoo found eight samples of the two new species during 2008 - 2012 for study.



▲ *The limestone tree frog in Cát Bà*

SET UP MECHANISM TO PROTECT BIODIVERSITY

The current growth in economy and tourism poses a threat to the amphibians in the Cát Bà Archipelago. Tourism activities, road construction and infrastructure development have damaged the natural environment of the island. Most of the archipelago is covered with limestone forests, which are quite sensitive and hard to recover once damaged. The Cát Bà Archipelago is isolated from the mainland, and hunting for medicinal and other trade products will have a negative impact on the local species, especially smaller ones.

The health of animals imported from other areas into the archipelago must be checked and monitored carefully to avoid contamination of the local species and surrounding environment.

To protect amphibians in the Cát Bà Archipelago, the Cát Bà National Park Management Unit must work closely with the local authorities to enhance the preservation of biodiversity as well as have in place mechanisms and sanctions so that local people do not destroy the nature, environment and biodiversity of the archipelago. In addition to this, the local government needs to encourage further research and study to discover new species. Endemic species should be studied carefully with regards to their population, location and biological features for further preserving solutions.

Based on the research database, the areas that should be prioritized in the preservation list can be based on the following criteria: Diversity of species, threatened species, forest area, quality of the ecosystem and human impacts. Besides, research activities that aim at restoring the forests should be promoted. A system should be established to supervise biodiversity management and attract domestic and international organizations to take part in scientific studies. The local government also needs to closely monitor the transport and exchange of animals between the mainland and Cát Bà Archipelago■

Nguyễn Thế

8 world Ramsar sites in Vietnam

February 2 is the World Wetlands Day. The World Wetlands Day 2018 has the theme "wetlands for a sustainable urban future".

VIETNAM

1 XUAN THUY National Park (Nam Dinh)

Recognised as the Ramsar site in 1989

120 species of vascular plants
220 species of bird fauna
>500 species of zooplankton and bottom feeder

2 BAU SAU wetlands in Cat Tien National Park (Dong Nai)

Recognised as the Ramsar site in 1998

The site is home to freshwater crocodile (Siamese crocodile) – the species is thought to be extinct.

(8,248 ha of wetlands, 115m lower than the sea level; 5,360 ha of seasonal wetlands; 151 ha of year-round wetlands)

3 BA BE LAKE (Bac Kan)

Recognised as the Ramsar site in 2011

The largest natural fresh water lake in Vietnam
Boasting an ecosystem of lagoon, lake, soil, rock, and mountain
1,268 species of vascular plants
553 species of vertebrates
106 106 species of fish
Many endangered species at the global level

4 TRAM CHIM National Park (Dong Thap)

Recognised as the Ramsar site in 2012

57 flora, aquatic and water-bird species priortised to be conserved (17 species in Vietnam's Red Book)

5 CA MAU CAPE National Park (Ca Mau)

Recognised as the Ramsar site in 2012

Ca Mau Cape National Park is a natural mangrove ecosystem with high value in terms of biodiversity, natural landscape, environment, culture and history.

6 CON DAO National Park (Ba Ria – Vung Tau)

Recognised as the Ramsar site in 2013

One of the two national parks in Vietnam preserving both forest and sea
882 species of plants
150 species of animals (many rare species are only in Con Dao: Con Dao black squirrel, Con Dao winged gecko, masked booby...)

7 LANG SEN Wetland Reserve (Long An)

Recognised as the Ramsar site in 2015

One of the typical examples of Dong Thap Muoi wetland ecosystem
It boasts an ecosystem of cajuput forests, paddy fields, seasonally inundated grasslands, woody vegetations, and rivers...
156 species of wild plants (lotus, lily, sweet bamboo shoots, rice ...)
149 species of vertebrates

8 U MINH THUONG National Park (Kien Giang)

Recognised as the Ramsar site in 2016

One of the two remaining most important areas of peat swamp forest in Vietnam
32 species of mammals
186 species of birds
186 species of amphibians
34 species of fish

Nguyên Hằng *(VNA source)*

환경부
Ministry of Environment

KEITI
한국환경산업기술원

Center of Global Green Network
HẠT NHÂN CỦA MẠNG LƯỚI XANH TOÀN CẦU

KEITI tạo dựng một thế giới xanh và sạch bằng cách phổ biến công nghệ thân thiện môi trường và thiết lập các mạng lưới hợp tác toàn cầu để mỗi quốc gia đều có thể tận hưởng những lợi ích mà môi trường đem lại.

Trung tâm Hợp tác Môi trường Việt Hàn (Vietnam – Korea Environmental Cooperation Center, VKECC) là cơ quan do Bộ Môi trường Hàn Quốc thành lập và giao Viện Công nghệ và Công nghiệp Môi trường Hàn Quốc (KEITI) quản lý và tổ chức hoạt động. Trung tâm được giao các chức năng và nhiệm vụ sau:

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- Quản lý các nguồn vốn hỗ trợ hợp tác và xúc tiến đầu tư, chuyển giao công nghệ;
- Hỗ trợ các doanh nghiệp Hàn Quốc và Việt Nam xúc tiến đầu tư trong lĩnh vực môi trường ở Việt Nam;
- Nghiên cứu và tìm hiểu thị trường công nghệ phục vụ công tác xúc tiến và phát triển hợp tác, đầu tư, chuyển giao công nghệ trong lĩnh vực môi trường và phát triển bền vững.

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